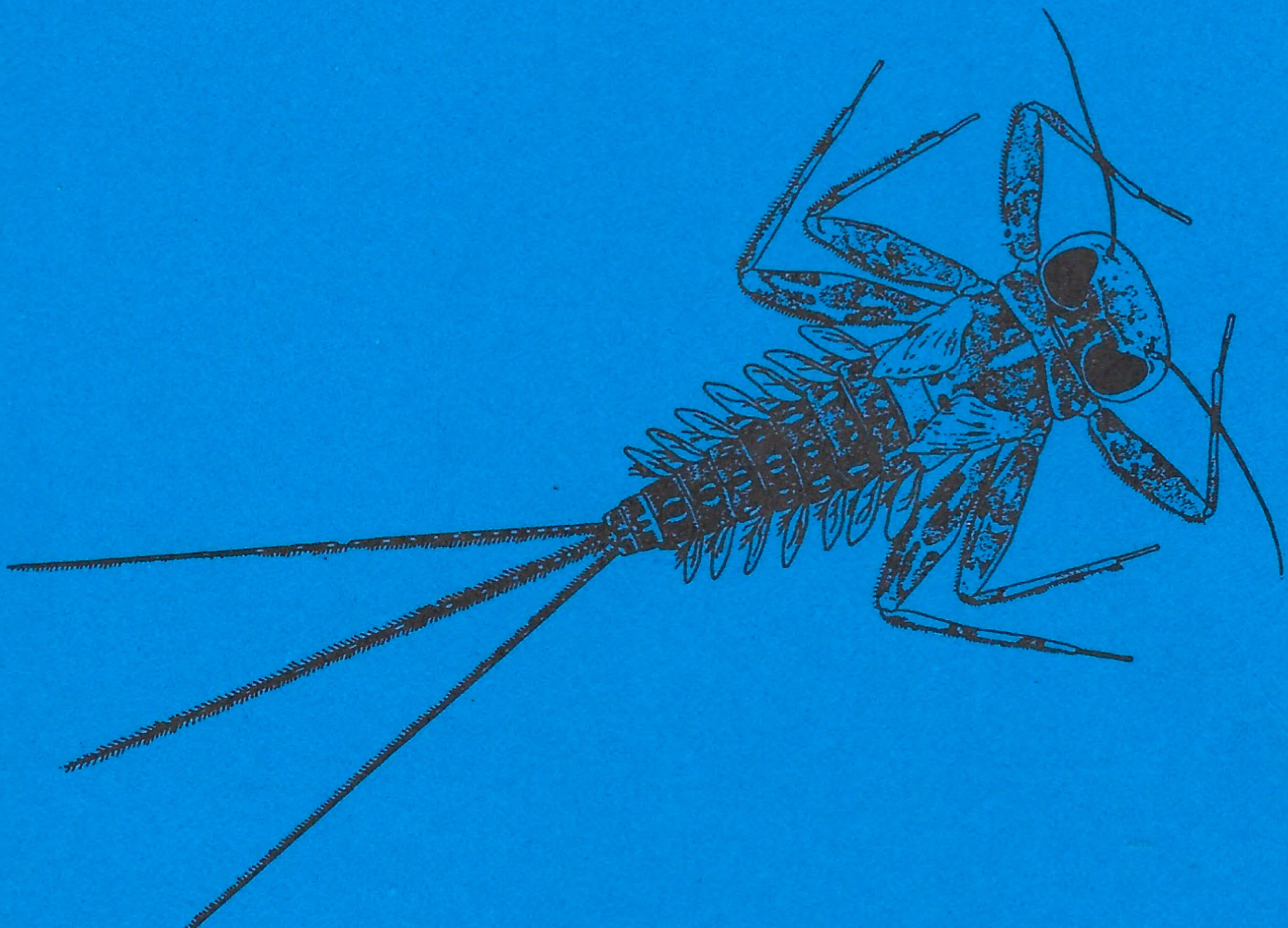
THE DISTRIBUTION OF THE EPHEMEROPTERA IN IRELAND

by

Mary Kelly-Quinn and John J. Bracken



Occasional Publication of the Irish Biogeographical Society

Number 5, 2000

Front Cover: nymph of *Heptagenia sulphurea* (Müller), a species common in Irish rivers with moderate flows. It also occurs on the shores of lakes in limestone regions.

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Sponsored by The Heritage Council
An Chomhairle Oidhreachta
and
National University of Ireland, Dublin
(Academic Publication Scheme)

Series Editor: J. P. O'Connor

Date of Publication: 1 October 2000

Occasional Publication of The Irish Biogeographical Society
Number 5, 2000

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ISBN 0-9511514-4-4

Abbreviation: ***Occ. Publ. Ir. biogeog. Soc.***

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Preface

In Irish waters, particularly rivers, the Ephemeroptera or mayflies form an inportant part of the freshwater fauna. They constitute a large proportion of the herbivorous and detritivorous components of the food chain. They are also a key element in the diet of many fish. Deep concern exists over the preservation of species diversity throughout the world. As a result, the authors undertook a two-year project in 1995, funded by a Forbairt Basic Research award, to investigate the Irish ephemeropteran fauna. Combining existing records with new data from an intensive field sampling programme, they provide detailed information here on the distribution and habitat preferences of the group in Ireland. Notes on species identification are also included. In addition, where possible, other relevant ecological observations and comparisons with the ephemeropteran faunas of Britain and mainland Europe are presented. William Clarke drew the superb illustrations. The Irish Biogeographical Society is delighted to publish this important work in its *Occasional Publications* series. On behalf of the Society, I wish to congratulate the authors and the artist on the excellent results of the project and to thank Mr J. M. C. Holmes for preparing the camera-ready text. Because of the generous sponsorship of The Heritage Council and the National University of Ireland, Dublin, copies of this *Occasional Publication* will be issued free to all members who have paid their 2000 subscriptions.

J. P. O'Connor,

General Editor,
Irish Biogeographical Society
12 July 2000

Occ. Publ. Ir. biogeog. Soc. No. 5 (2000)

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Abstract

An intensive field sampling on the Ephemeroptera commenced in the Zoology Department, University College Dublin in 1995. This programme ran for two years and supplemented the existing records. The results provided a modern voucher collection of the Irish species. *Circa* 400 river and lake sites were sampled from the major catchments in the country covering a wide range of habitat types. All available relevant published records and many unpublished reports and theses containing ephemeropteran data were sourced to augment the existing data. Earlier workers recorded 36 ephemeropteran species (mayflies). This current study proposes a reduction to 33 species for inclusion on the Irish list. A total of 31 species have been verified by the authors from field collections taken during the 1995/98 period. Sampling covered the full range of potential habitats. Examination of the distribution maps will clearly show that 18 species are common and abundant throughout Ireland today and include: *Baetis scambus*, *Baetis rhodani*, *Baetis muticus*, *Centroptilum luteolum*, *Cloeon dipterum*, *Cloeon simile*, *Rithrogena semicolorata*, *Heptagenia sulphurea*, *Heptagenia fuscogrisea*, *Ecdyonurus venosus*, *Ecdyonurus dispar*, *Ecdyonurus insignis*, *Leptophlebia vespertina*, *Ephemera danica*, *Ephemerella ignita*, *Caenis luctuosa*, *Caenis horaria* and *Caenis rivulorum*.

A further eight mayfly species have been shown to exhibit patchy distributions in Ireland but are generally abundant in localised areas. These include, *Ameletus inopinatus*, *Siphlonurus lacustris*, *Baetis vernus*, *Baetis atrebatinus*, *Electrogena lateralis*, *Siphlonurus alternatus*, *Procloeon bifidum* and *Paraleptophlebia cincta*.

An additional seven species: *Siphlonurus armatus*, *Baetis fuscatus*, *Rhithrogena germanica*, *Ecdyonurus torrentis*, *Leptophlebia marginata*, *Ephemerella notata* and *Caenis macrura* are rarely encountered. The paper deals predominantly with species identification, their distribution and habitat preferences. Where possible other relevant ecological observations and comparisons with the ephemeropteran fauna from Britain and mainland Europe have also been included.

Foreword

Deep concern continues to prevail over the preservation of species diversity throughout the world. It poses a major ecological challenge to most countries and Ireland is no exception. Some ten years ago, Curtis and McGough (1988) highlighted the vascular plants currently under stress in this country while the threatened vertebrate species were more recently listed by Whilde (1993). Accurate baseline data on the species composition from various ecosystems and their distribution in any given area are becoming increasingly important as a fundamental prerequisite for biological assessment of water quality and for the implementation of conservation measures. Comprehensive accounts of the Irish aquatic fauna are limited to such groups as the Trichoptera (O'Connor, 1975, 1987), Plecoptera (Costello, 1988), Chironomidae (Murray and Ashe, 1984), Mollusca (Ross, 1984), Odonata (Merritt *et al.*, 1996; Nelson, 1977) and Neuroptera (Barnard *et al.*, 1991). The Ephemeroptera have been recorded as early as the end of the 19th century (King, 1889; King and Halbert, 1910). Many new records and detailed ecological information on their life-histories were later added by Harris (1922-1960, unpublished manuscript lodged in the National Museum of Ireland). Apart from these, and two further major works by Whelan (1980a) and Connolly and McCarthy (1993), no systematic information has been compiled for the group.

In Irish waters, particularly rivers, the Ephemeroptera are numerically abundant and constitute a large proportion of the herbivorous and detritivorous components of the food chain. They are also a key element in the diet of many fish, especially salmonids. The recognition of their functional importance in these habitats, together with a growing concern that many species may be in decline, was the underlying impetus for reviewing of the national status of the group. This two-year project, funded by a Forbairt Basic Research award, commenced in October 1995. This paper details what is known of the distribution of the Irish ephemeropteran fauna together with ecological notes. Certain key diagnostic characters of selected species are highlighted by a series of diagrams.

Outline of survey

Published and many unpublished reports and theses containing ephemeropteran data were sourced. In the case of the unpublished material, only specimens which could be confirmed by

the authors were included in the species list. Collections have been retained in the Zoology Department, University College Dublin, but a voucher collection has also been lodged in the National Museum of Ireland. A National Grid reference was derived for each record where none was hitherto provided. This was a particularly onerous task in the case of the works of King and Halbert (1910) and Harris (unpublished manuscript). In many instances river or lake names were not provided and precise locations could not be derived. Such records were, however, assigned to their appropriate 10km^2 grid.

A field sampling programme was undertaken to supplement the existing records and to provide a voucher collection of the Irish species. From 1995, in excess of 300 river and lake sites were sampled from the major catchments in the country. Other samples were provided by a number of Irish biologists. Personnel from the Environment Resources Management, University College Dublin, kindly provided *circa* 150 samples. These collections were from a range of the highest altitude lakes in the country. Forty yielded Ephemeroptera and provided data from systems which otherwise would not have been sampled. Samples from a further thirty lakes was provided by researchers from the Zoology Department, Trinity College Dublin. Some of these included seasonal collections. Thus, the range and distribution of the habitats covered by the survey were substantially increased to include soft-water, mountain streams and rivers, high altitude acid lakes, alkaline lakes and rivers, lagoons, ponds, turloughs (temporary lakes), canals and ditches. *Circa* 400 additional records were thus added to the existing database.

Because nymphs achieve maximum size during the May/July period, the main sampling effort was concentrated at this time. Samples were generally taken using a pond net but it was also necessary to collect some specimens by hand to ensure that delicate taxonomic structures remained intact. This was particularly critical for members of the Heptageniidae. Adults were also collected during this time. The undersides of bridges were checked for adults which had become entrapped in spiders' webs. All material was preserved in 70% alcohol. When species determinations were completed, a representative sample was retained from each site for future reference.

An overview of the distribution of each species is presented on a series of maps (10 km^2 grid) prepared using ArcView software on a Geographical Information System (GIS). The records were separated into pre- and post-1970 periods. The latter represents the period when pollution

pressures on freshwater systems increased from a range of sources, particularly agriculture. Increased fertilisation of aquatic sources caused the onset of eutrophication. The precise locations of each record and the sources of the material are included in tabular form (Appendix). Given the current focus of research and monitoring on the drainage basins, the table also includes details of the catchment number and hydrological area (Fig. 1) as defined by the Environmental Protection Agency. The records are initially ordered according to hydrometric area. The rivers and lakes within each hydrometric area are then grouped alphabetically to facilitate searches.

General characters of the Ephemeroptera

Life-histories of the Ephemeroptera are well documented. Information relevant to Irish waters has been given by Harris (1952). The cycle consists of aquatic egg, larval or nymphal stages followed by two aerial, adult forms. The Ephemeroptera are unique on two counts in that: (i) they possess two adult phases, and (ii) the final phase usually emerges within 24 hours of the first. This in effect means that they have two flying stages, both of short duration. The first adult phase is called the subimago, which undergoes a second moult into the imago. This unique feature is thought to be related to the fact that the final moult is necessary to permit the emerging imago to extricate its elongated forelegs. Neither the subimago nor the imago feed. They tend to be short-lived, rarely surviving beyond 2/3 days, except in ovoviviparous species. The adult phase is devoted to swarming behaviour, reproduction, and the strategic deposition of eggs at appropriate locations in the water. In angling circles the subimago is referred to as the 'dun' and the imago as the 'spinner'. Many species have also been assigned common names by anglers. The life cycle strategy varies from semivoltine, with only one generation achieved in two years, to polyvoltine, where higher water temperatures allow the production of several generations each year. Most species are, however, either univoltine or bivoltine.

The principal taxonomic keys currently used for the identification of species in Britain and Ireland are Elliott *et al.* (1988) for the larvae, and Elliott and Humpesch (1983) for the adults. Further useful taxonomic descriptions are summarised by Harker (1989) and Engblom (1996). Identification of the adult females is still not possible for many species.

Results

A total of 33 species, belonging to seven families, was derived from the sampling programme and the subsequent literature review. A further three species were considered but for various reasons could not be validated and were, therefore, precluded from the Irish list. *Ephemera vulgata* was originally listed by King and Halbert (1910). Specimens encountered during this study which bore similarities to *E. vulgata* were considered to be early instars of *E. danica*. Two further species, *Paraleptophlebia werneri* and *Baetis niger*, have been noted by a number of Irish researchers. Here again the putative specimens of *Paraleptophlebia werneri* proved to be too small (early instars) for positive identification. Likewise the records of *Baetis niger* are most likely to be early instars of *Baetis muticus*.

The Irish list is considerably impoverished when compared with the 49 species occurring in Great Britain (Bratton, 1990) or the 71 species found in Northern Europe (Engblom, 1996). However, many Irish species exhibit a wider distribution throughout the island as a whole when compared to freshwater habitats in the rest of Europe. This may be a feature of the relatively higher availability of clean-water systems in Ireland in combination with reduced competition from other species (Kelly-Quinn and Bracken in press).

In excess of 1,500 records have been compiled and provide coverage for almost 540 grids ($10km^2$ standard size) throughout the country (Fig. 2). The distribution of these records with respect to geology is shown in Fig. 3. The majority of the records are from the post-1970 period but data from both periods are now available for 132 of these squares. These data cover over 110 catchments from all 40 hydrometric areas in the country and include major systems such as the Rivers Barrow, Boyne, Corrib, Erne, Liffey, Munster Blackwater, Nore, Shannon and Suir. Grids with high species-diversity have been highlighted in Fig. 4. A number of relatively high-diversity locations are immediately obvious, such as the Corrib catchment, Killarney and Dublin/Wicklow area. Curiously enough these areas have been the subject of intensive study which may in part explain the high results. However, catchments with varied geological and topographical types, such as the Liffey and Corrib, can be expected to support higher species diversity.

FIGURE 1: hydrometric areas in Ireland.

FIGURE 2: distribution of all available ephemeropteran records.

▲ = pre 1970 ● = post 1970

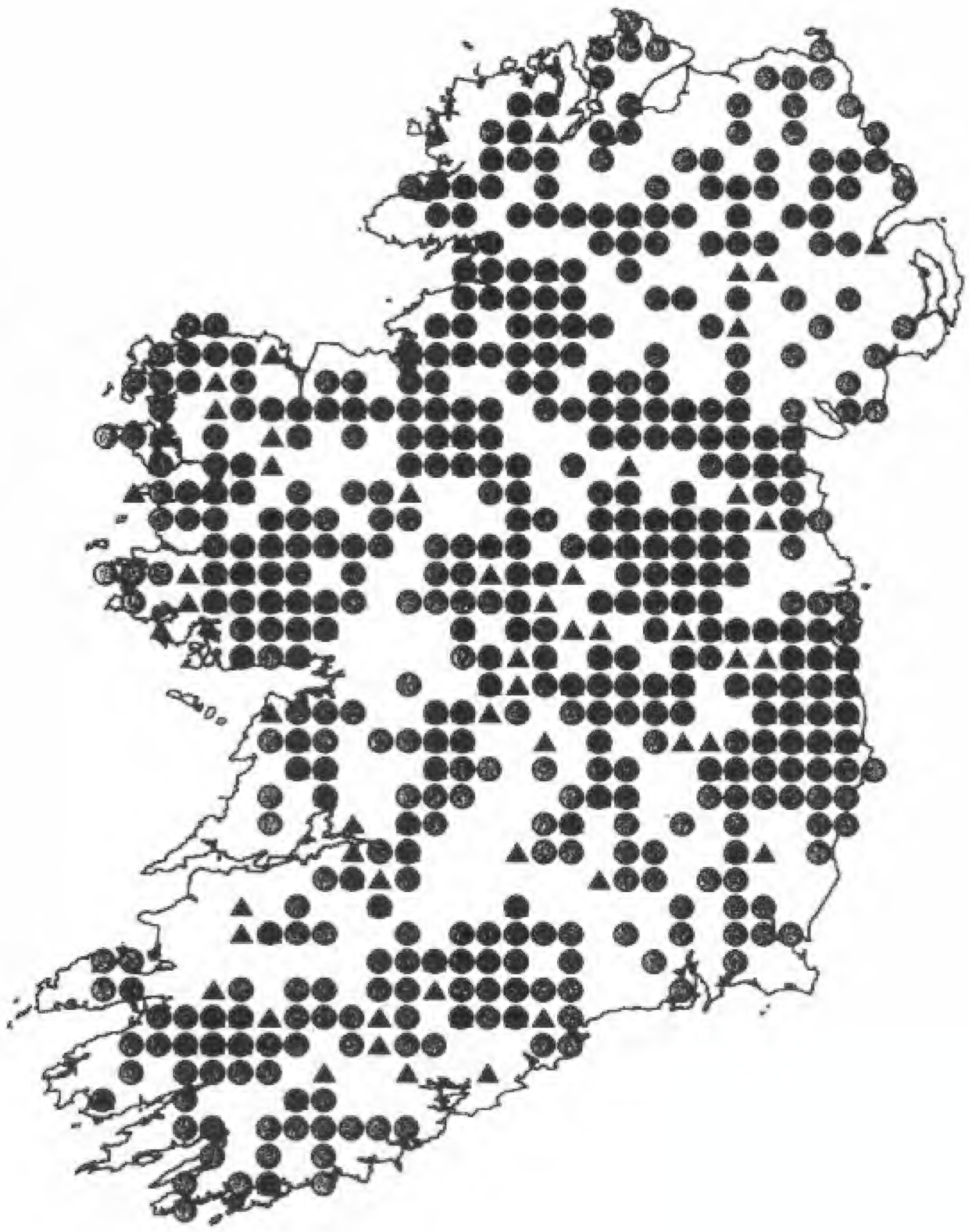


FIGURE 3: distribution of all available ephemeropteran records in relation to geology. Based on the 1:750,000 scale Geological Map of Ireland, with permission of the Director, Geological Survey of Ireland.

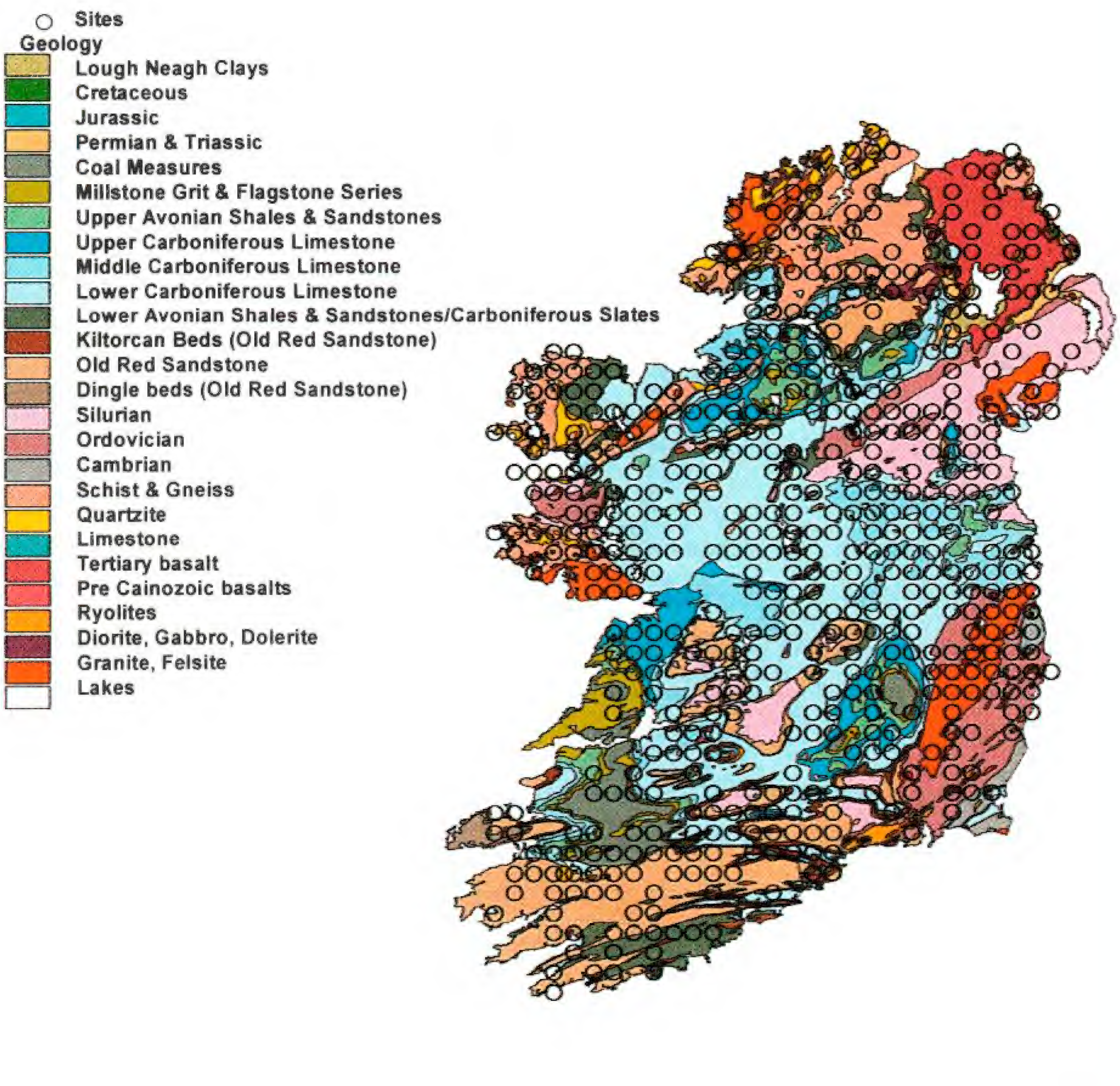
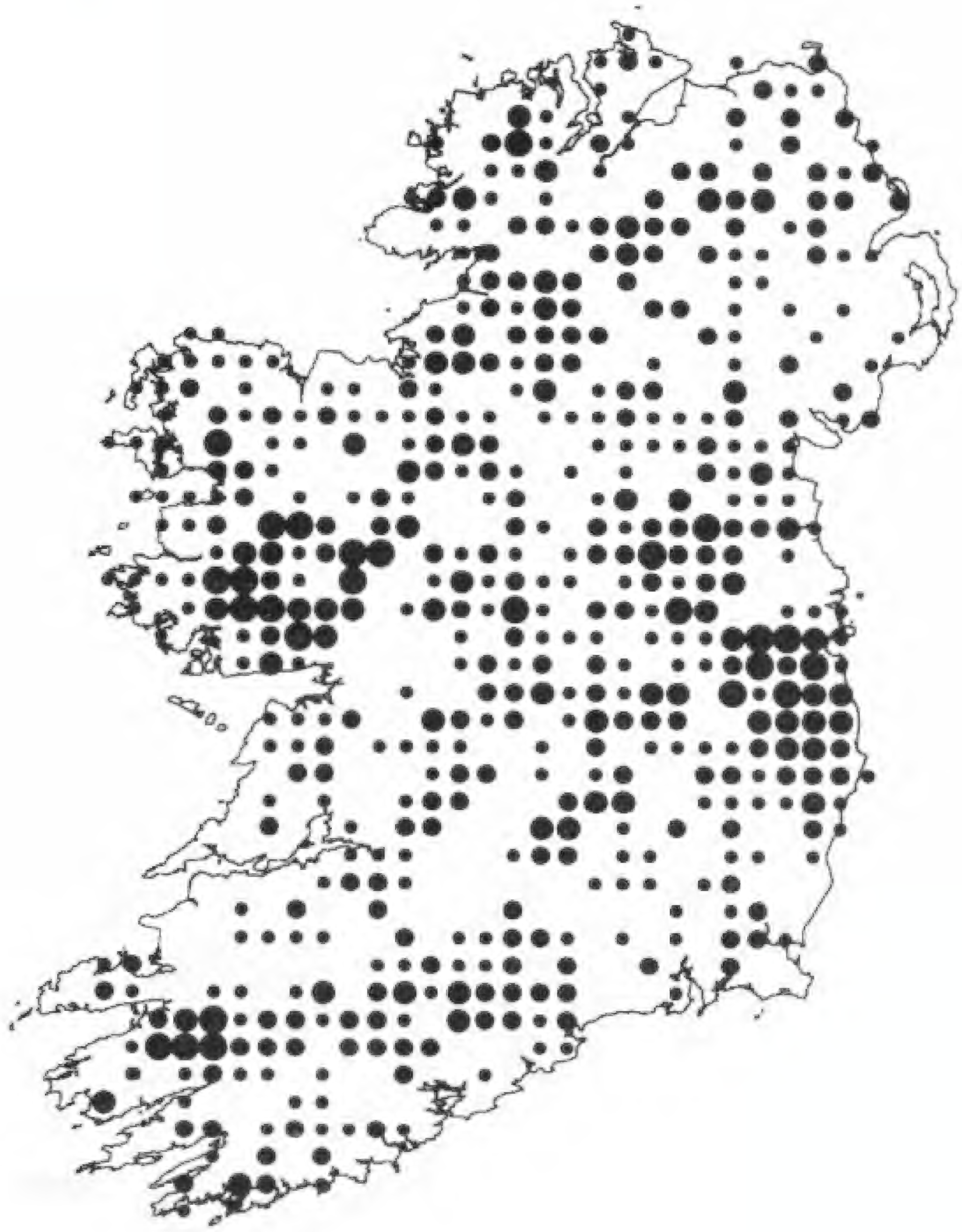


FIGURE 4: number of all ephemeropteran species per 10km² grid.

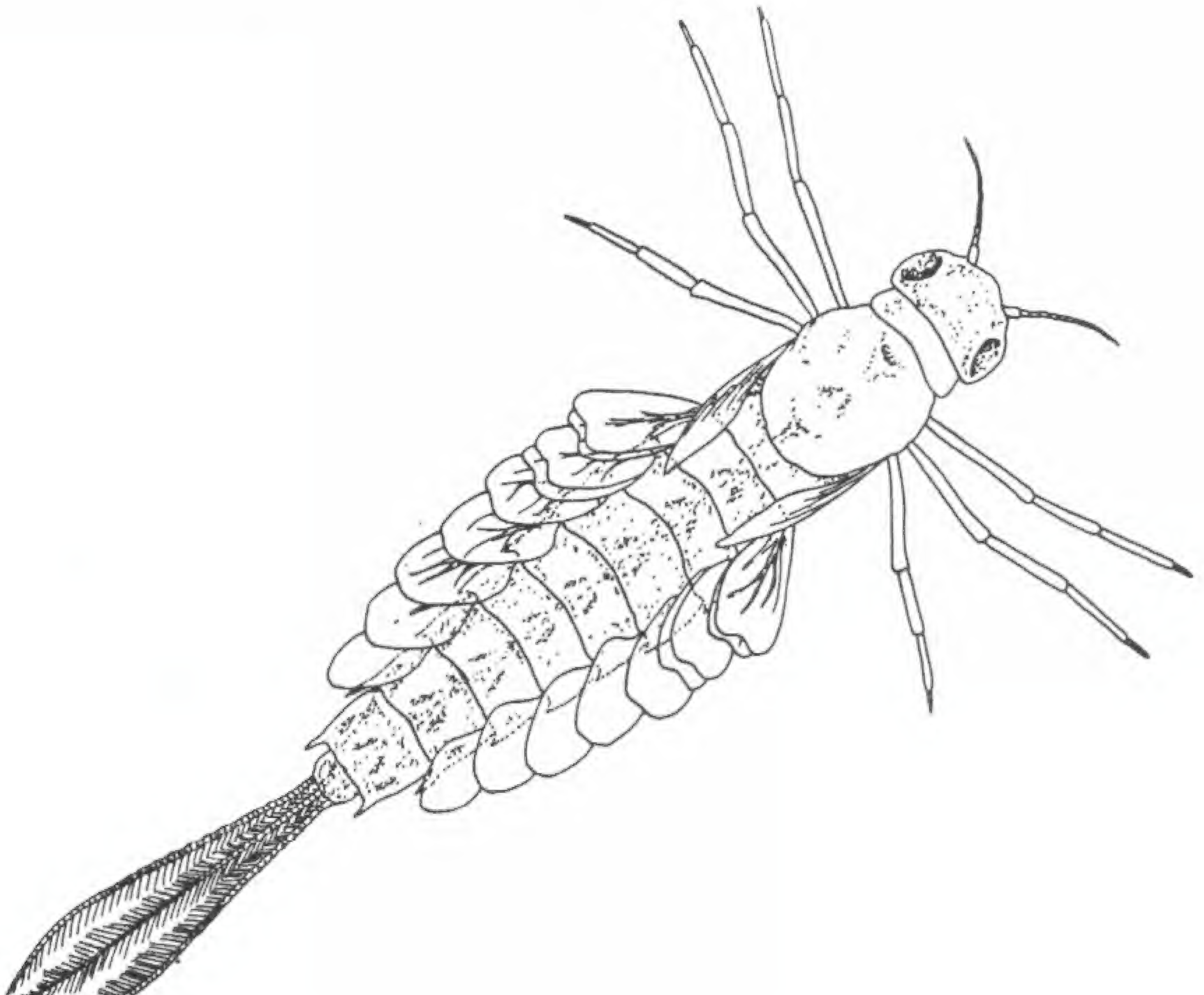
• 1 – 5 species ● 6 — 10 species ● 11— 15 species ● 16 – 20 species



Siphlonuridae

The family is represented by four relatively uncommon species: *Siphlonurus armatus* Eaton, *Siphlonurus lacustris* Eaton, *Siphlonurus alternatus* (Say) and *Ameletus inopinatus* Eaton. With the exception of *Ameletus inopinatus*, all other members of this family have relatively large nymphs. The hind corners of the abdominal segments are drawn out to form spines, a character which easily distinguishes this family from other ephemeropteran species (Fig. 5). These mayflies are not commonly encountered by anglers but some, such as *Siphlonurus lacustris*, can form an important part of the diet of young salmonids in mountain streams (Frost, 1939).

FIGURE 5: general body form of the Siphlonuridae (e.g. *Siphlonurus lacustris*).



Siphlonurus armatus **Eaton, 1870 (Duns and Spinners - Summer Mayfly)**

Siphlonurus armatus is perhaps the rarest Irish ephemeropteran (Fig. 6). Three early records exist from the Owenea River in Donegal (Southern, 1924), the Killarney area (King and Halbert, 1910) and Connemara (Praeger, 1929). Harris (1952) regarded it as uncommon and mentioned that it occurred in Killarney and Galway but failed to provide precise locations. He noted that this species occurs in lakes and ponds. No recent records exist for this species and little is known about its ecology. It is worth recording that *S. armatus* is also uncommon in Great Britain.

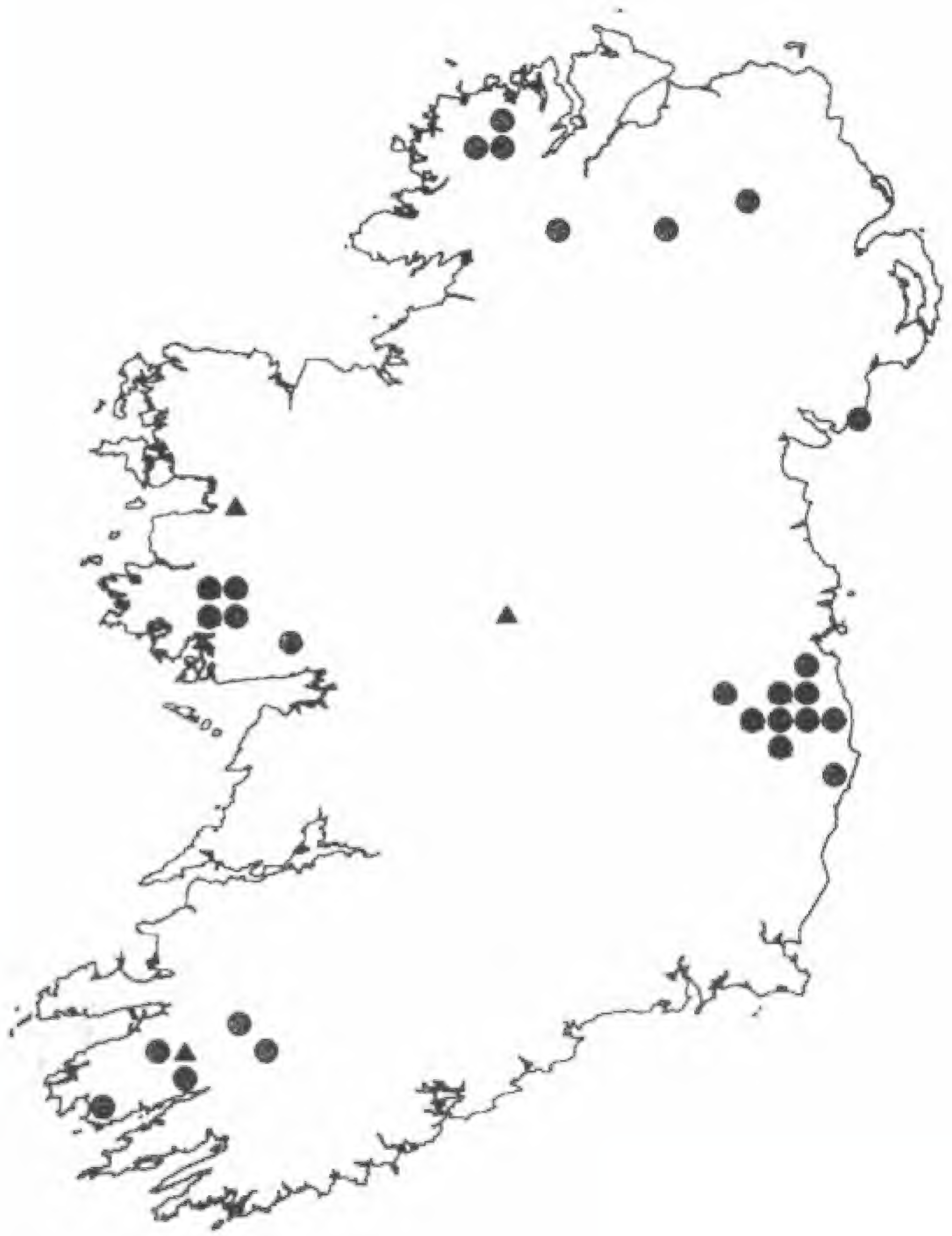
FIGURE 6: distribution of *Siphlonurus armatus* Eaton.
▲ = pre 1970 ● = post 1970

***Siphlonurus lacustris* Eaton, 1870 (Duns and Spinners - Summer Mayfly)**

The distribution of *Siphlonurus lacustris* suggests that it is scarce (Fig. 7). It can, however, become relatively abundant in certain localised habitats, such as soft-water mountain streams and lakes, but it also occurs in some alkaline rivers. The species is easily overlooked if sampling is confined to riffle habitats. It is a large summer species which favours backwaters where pool-like conditions exist. One point worthy of mention is the fact that in Ireland it has a preference for lotic habitats, which is contrary to the findings of Maitland (1980). He found that 14 of the 15 sites where *S. lacustris* occurred in Scotland were lentic habitats.

FIGURE 7: distribution of *Siphlonurus lacustris* Eaton.

▲= pre 1970 ● = post 1970



***Siphlonurus alternatus* (Say, 1824) (Duns and spinners - Summer Mayfly)**

This species, formerly known as *Siphlonurus linnaeanus* (Eaton, 1871), was first recorded in the 1950's (Harris, 1952; Macan and Lund, 1954) but its occurrence has been poorly documented since then (Fig. 8). It has been found in both lotic and lentic habitats. It also tolerates a range of hydrochemical conditions ranging from low conductivity, episodically acidic streams to alkaline lakes. It can also occur in turloughs, as confirmed by the authors from collections kindly supplied by Reynolds (Zoology Department, Trinity College Dublin).

Overall, though, it is a fairly uncommon species and no firm conclusions can be reached regarding its exact habitat requirements. It has a similar status in Great Britain but does not meet the criteria for classification as a Nationally Notable Species (Bratton, 1990).

FIGURE 8: distribution of *Siphlonurus alternatus* (Say).

▲= pre 1970 ● = post 1970

Ameletus inopinatus Eaton, 1887

Ameletus inopinatus, considered to be an arctic-alpine relict species, was first recorded in the Glencullen River, Co. Wicklow, in 1970 by Clabby and Bracken (1976). It was later found in the headwaters of the Avonmore River by Fahy (1977) and in the Glenealo River, Glendalough, by Bowman (1991a). The present authors found it to be widespread in the cold-water streams of the Wicklow mountains (Fig. 9) above the 300m contour (Kelly-Quinn, 1993; Kelly-Quinn *et al.*, 1997). Furthermore, it is the only mayfly species found above the 500m contour line in the county. One other record, outside of Wicklow, was located in a small stream in Glenveagh National Park, Co. Donegal (Lynch *et al.*, 1995) in the 1990's. It has not been detected in any other mountain streams in the country. Again it may be under-represented because of its superficial resemblance to the Baetidae. Elliott *et al.* (1988) also drew attention to this fact. Irish researchers working in streams above 300m should be alert to its possible presence. Clearly the best diagnostic characters to distinguish the species from members of the Baetidae are the maxillae of *Ameletus*. These large structures, with comb-like bristles, protrude slightly from the mouth, as can be seen in Fig. 10.

A. inopinatus is also widespread in mountain streams in many parts of western Europe. Maitland (1980) maintains that mayflies offer a good example of how altitude and latitude interact. He interestingly refers to *A. inopinatus* as being a more northerly species which occurs in Cumbria, England, but only in streams above 300m. This represents a similar altitudinal distribution to that found in Ireland. Maitland (1991) highlighted its occurrence at lower altitudes, down to sea level, in Scotland, particularly in the far north of the country. He further suggested that this species may disappear completely from its southern waters if water temperature were to rise. Eventually, in Scotland, it may only be found at higher altitudes than at present. From these deliberations it would appear that at some future date *A. inopinatus* could emerge as an important indicator species of climate change.

FIGURE 9: distribution of *Ameletus inopinatus* Eaton.

▲ = pre 1970 ● = post 1970

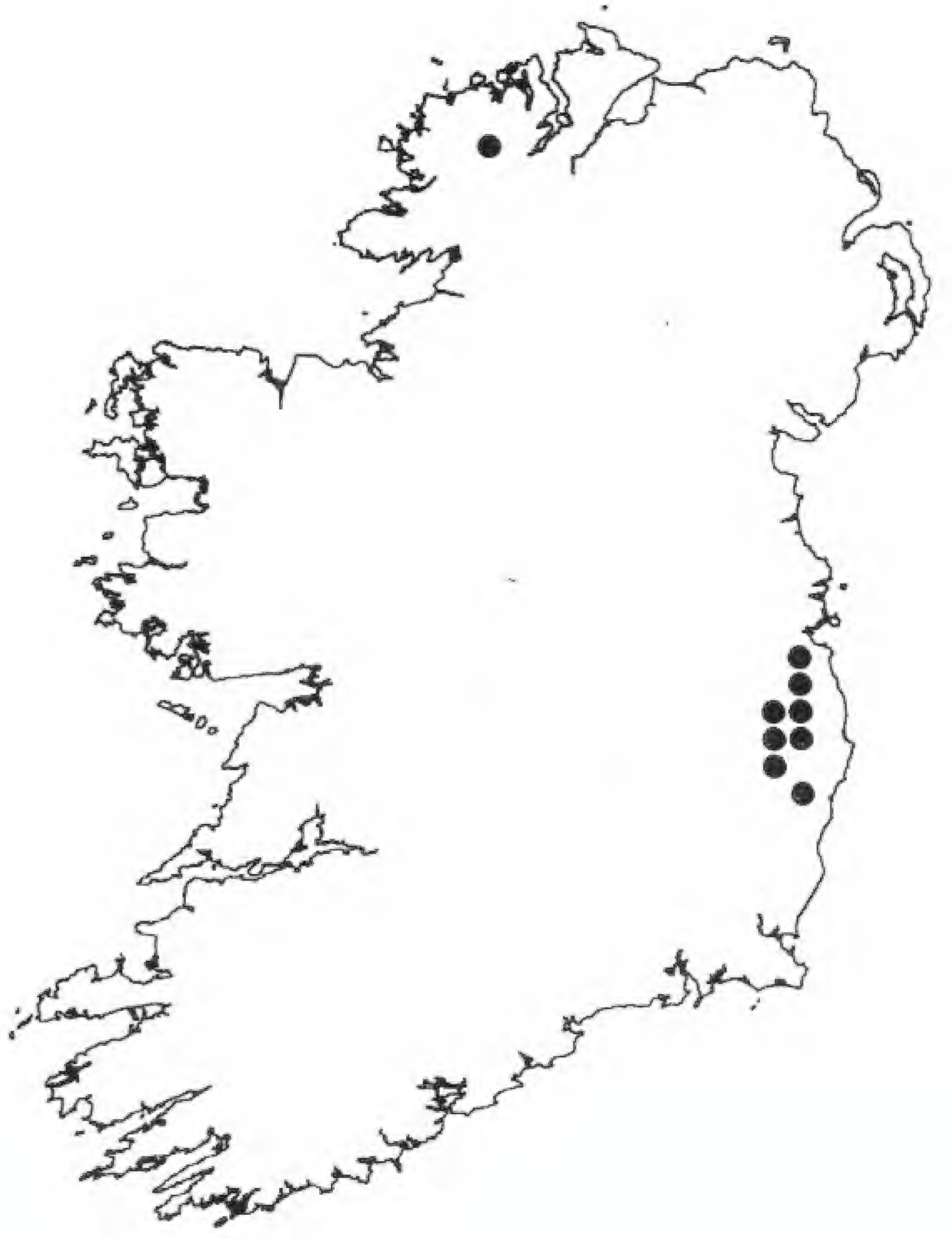
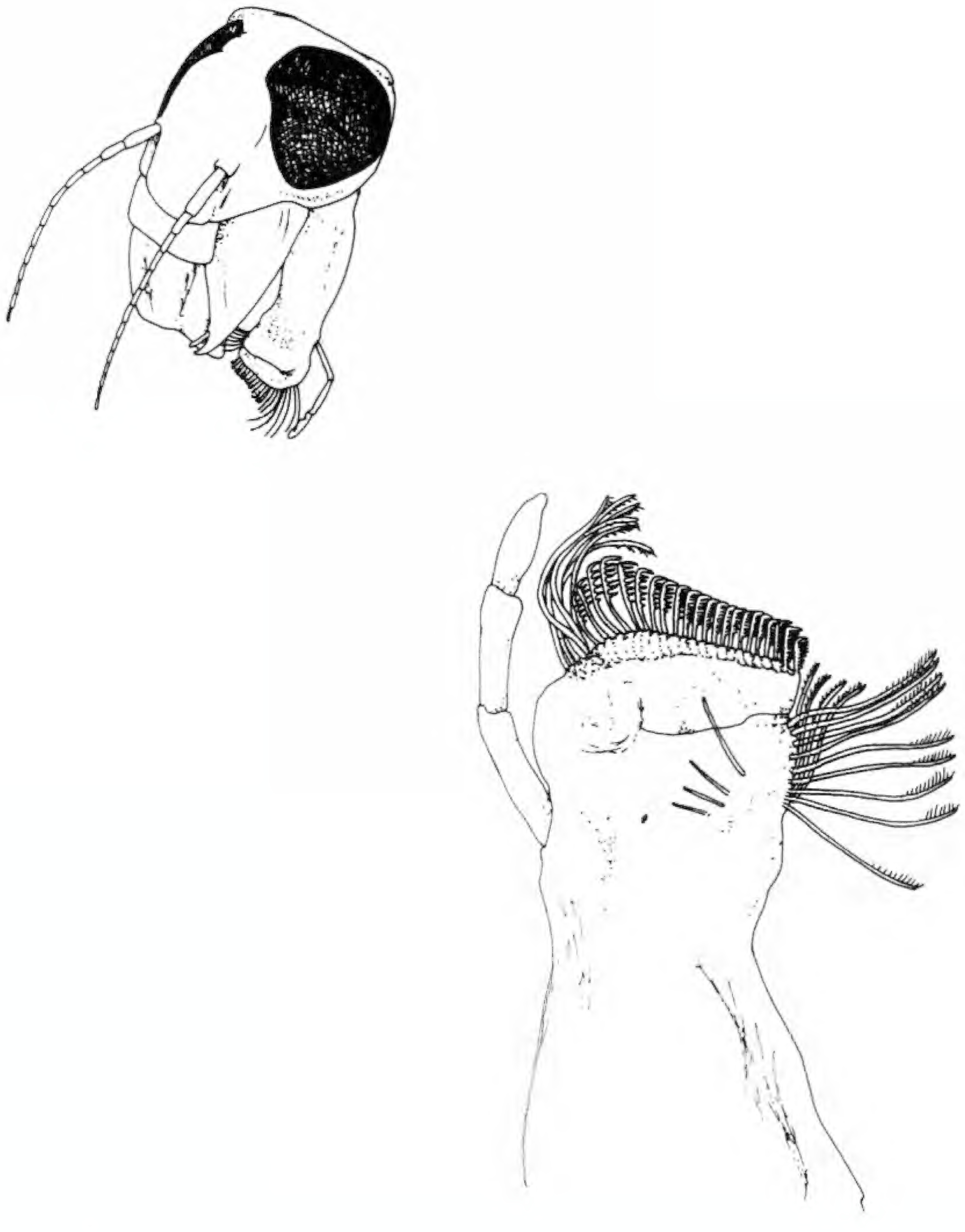


FIGURE 10: head and maxilla of *Ameletus inopinatus* Eaton.



Baetidae

The Baetidae, together with the Ecdyonuridae, comprise the core of the Ephemeroptera in Irish rivers (Kelly-Quinn and Bracken, in press). They occur in large numbers, the bulk of which are usually *Baetis rhodani*. It is essential, therefore, that the less common species are segregated at an early stage. The following account will highlight characters which enabled the present authors to achieve this task more easily. In general, oligotrophic river sites tend to support *circa* two different baetid species while as many as four species may be encountered in the more alkaline waters.

Baetis fuscatus **(Linnaeus, 1761) (Duns and Spinners - Pale Watery, Female Spinner, Golden Spinner)**

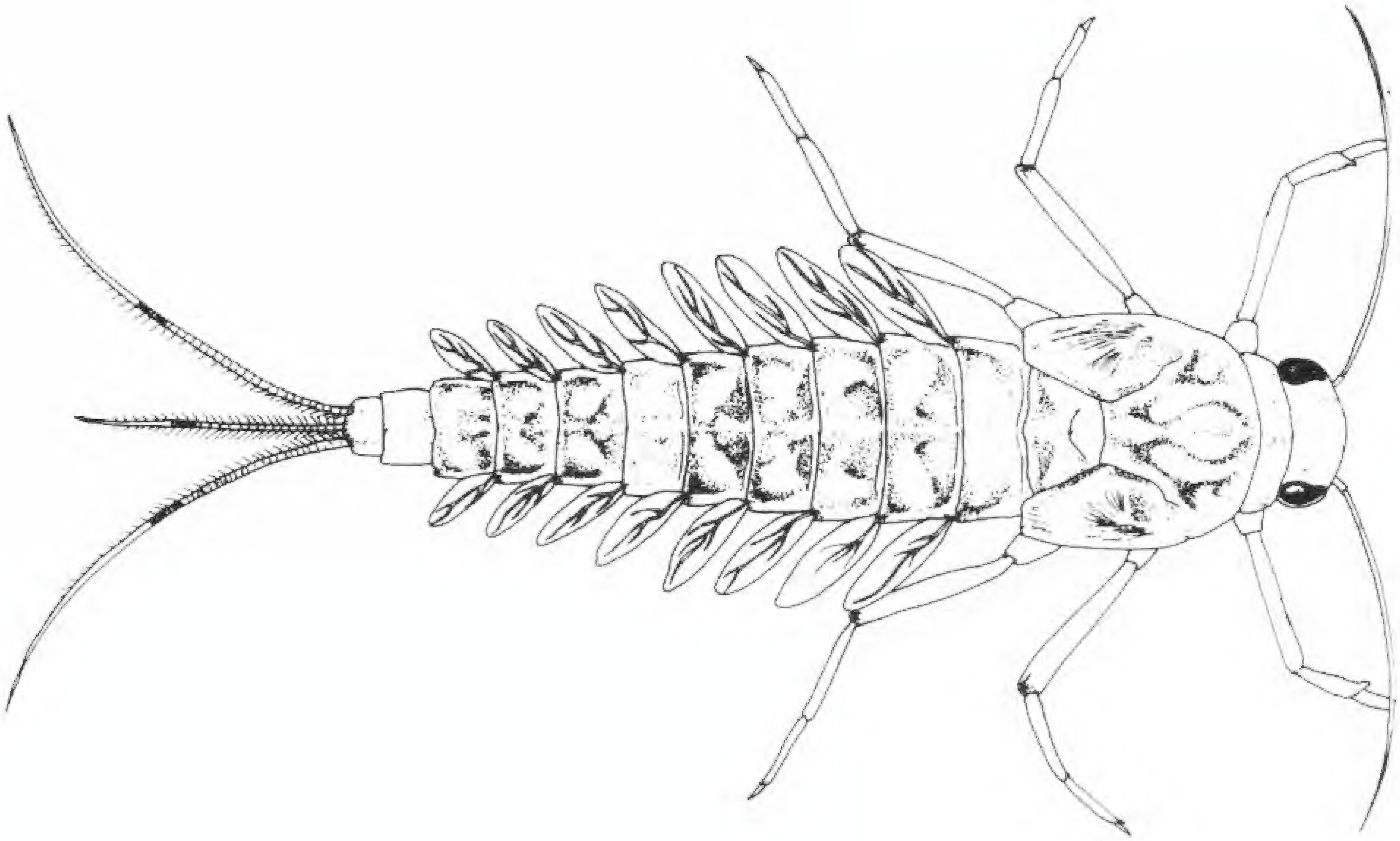
The taxonomy of *Baetis fuscatus*, formerly known as *Baetis binoculatus* (Linnaeus), poses certain problems. The nymph is difficult to distinguish from *Baetis scambus*. Engblom (1996) highlighted this fact which also pertains to the adults, especially in areas where the two species are likely to occur. The nymphs collected during this study best fitted the taxonomic descriptions of *B. scambus*. The early records of King (1889), King and Halbert (1910) list *Baetis fuscatus* at several locations in Ireland (Fig. 11). It was subsequently identified in the Killarney area by Wise and O'Connor (1997). *B. fuscatus* cannot be dismissed from the Irish list until further evaluation of the species is carried out, particularly in Co. Kerry. This area is known to support species which are not commonly found in other parts of the country.

FIGURE 11: distribution of *Baetis fuscatus* (L.).
▲ = pre 1970 ● = post 1970

Baetis scambus Eaton, 1870 (Duns and Spinners - Small Dark Olive, Female Small Red Spinner)

Baetis scambus is a fairly small nymph. For this reason it can be easily confused with *Baetis rhodani* by inexperienced workers. However, it is possible to separate *B. scambus* from the other Baetidae by the distinctive patterns present on the abdominal segments (Fig. 12).

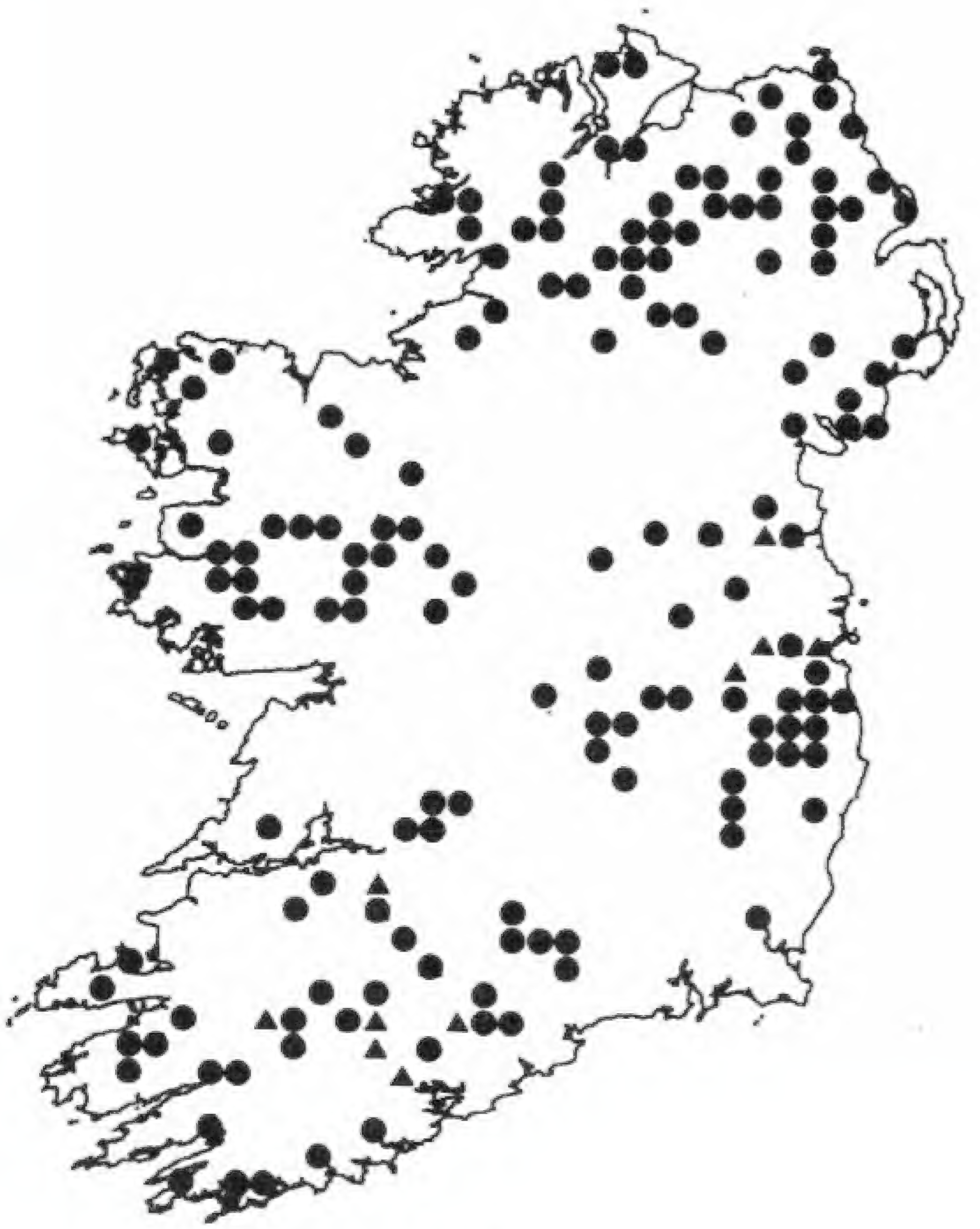
FIGURE 12: abdominal pattern of _Baetis scambus_ Eaton.



B. scambus occurs in most rivers and in all parts of the country (Fig. 13). It has been found in episodically acidic waters at Ballysmuttan, near the headwaters of the River Liffey in the Wicklow Mountains. It is, however, more common in alkaline rivers with fast-flowing currents. In either case the numbers encountered are usually small. The difficulty in separating *B. scambus* from *B. fuscatus* should be borne in mind if there is a likelihood of both species occurring in the same samples.

B. scambus is also widely distributed throughout central and northern Europe. Maitland (1980) mentions that it occurred in 96% of the 53 British sites which were all lotic stations where strong currents were a feature. The spinners are similar in appearance to *Baetis muticus*, but rarely leave the littoral areas.

FIGURE 13: distribution of *Baetis scambus* Eaton.
▲= pre 1970 ● = post 1970



***Baetis vernus* Curtis, 1834 (Duns and Spinners - Medium Olive)**

Earlier workers treated *Baetis vernus* and *Baetis tenax* Eaton as two separate species, based mainly on the male genitalia, wing-vein colour and hind-wing shape. In an Irish context, Harris (1952) stated that the reported occurrence of *B. vernus* in this country needs confirmation, although he also reported *B. tenax* to be widespread. Kimmins (1972) did not distinguish between them. Later, Elliott and Humpesch (1983) stated that perhaps *B. tenax* is a synonym of *B. vernus* but that a great deal of confusion still exists. In the absence of further information, the authors have accepted the view that the two are actually one and the same species.

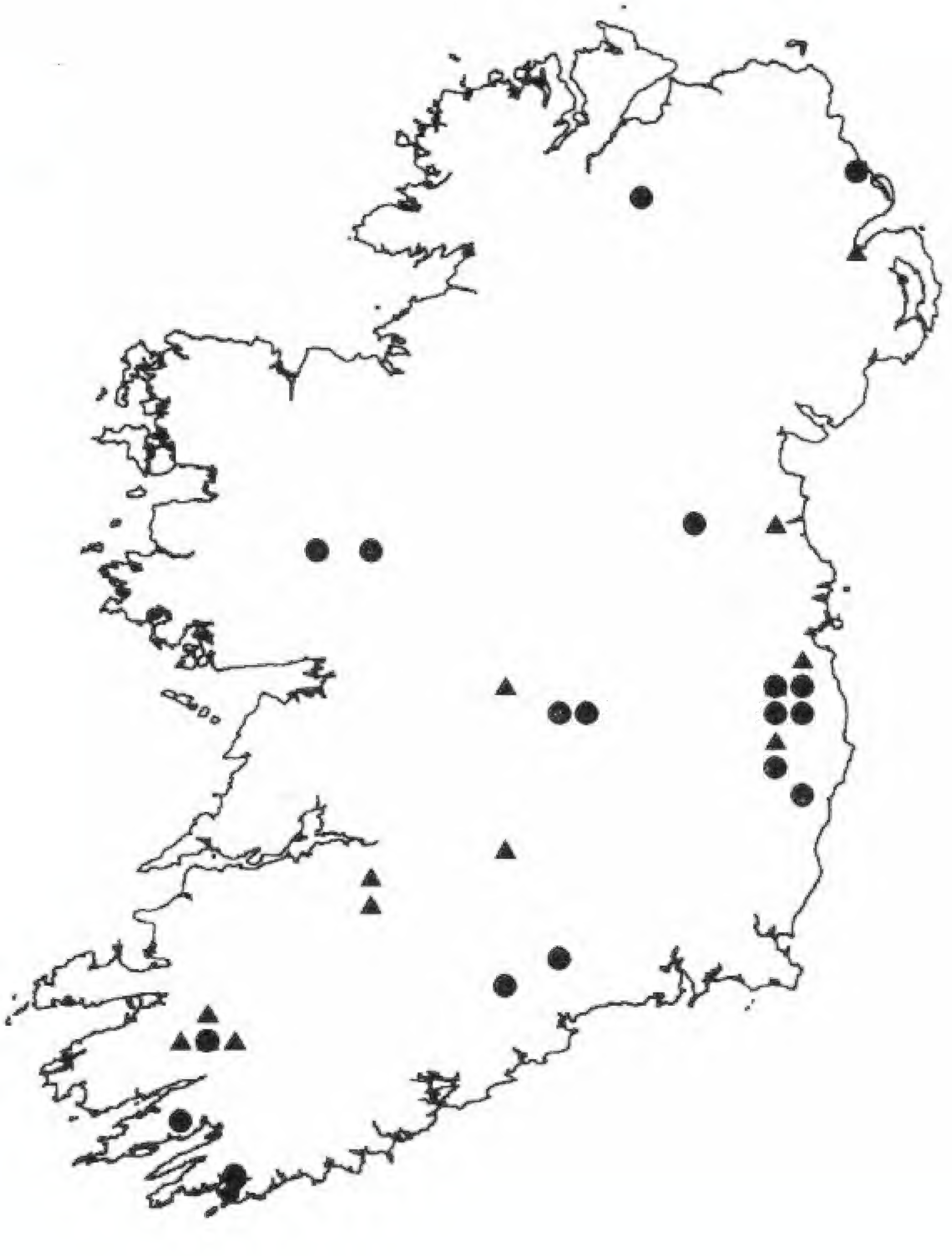
The body form and general colouring of *B. vernus* closely resemble that of *B. rhodani*. Further, the mouth parts differ little between the two species. Engblom (1996) highlighted *B. vernus* as a complex form with much variation and often bearing the habitus of *B. rhodani*. However, it should be remembered that *B. vernus* lacks spines on the margins of the gills, as will be illustrated later under *B. rhodani*.

Connolly (1986) recovered nymphs of *B. vernus* in the Corrib system and commented on the fact that it occurred in low numbers by comparison with all other Irish Baetidae. The new data presented in this paper add substantially to the records for this species (Fig. 14). It clearly has a lotic preference and a higher occurrence in oligotrophic systems such as those of the Wicklow, Commeragh, Slieve Bloom and the Kerry Mountains. It was also found in the alkaline waters of the Ulster Blackwater while the western records of Connolly (1986) were again from limestone rivers.

The authors observed that *B. vernus* often became numerically abundant but only in the absence of other Baetidae. Records of *B. vernus* in the River Liffey at Ballysmuttan date back to the 1930's, but it was located again in 1990. It has generally been the least abundant of all the four baetid species which occur at this site. The authors revisited the site in 1995. Interestingly, *B. vernus* was the only baetid present and it occurred in greater numbers than previously recorded. This phenomenon was also recorded further upstream. Severe acidic conditions during the winter months could have caused mortalities among the other Baetidae. *B. vernus* may have escaped such impact because it over-winters in the egg stage.

FIGURE 14: distribution of *Baetis vernus* Curtis.

▲= pre 1970 ● = post 1970



Baetis rhodani (Pictet, 1844) (Duns and Spinners - Large Dark Olive, Female Spinner, Large Red Spinner)

Baetis rhodani is one of the most widespread and abundant mayflies in Ireland. It enjoys a similar position in Britain and in most parts of Europe. It forms the core of the ephemeropteran community in Irish rivers, where it is especially suited to fast currents. It also has one of the longest flight periods, extending from April through to November. The species is readily recognisable, but many of the other broad-bodied Baetidae can easily be mistaken for it. Fortunately, *B. rhodani* is the only baetid which can be positively identified by gill examination. The gills bear a series of blunt marginal spines, not to be confused with the serrations present on the gills of some other Baetidae (Fig. 15).

The distribution map (Fig. 16) probably under-represents the prevalence of *B. rhodani* in Irish rivers. It is generally present in all relatively clean rivers throughout the country. Occasionally it appears at the inflow or outflow points of rivers entering or leaving lakes. *B. rhodani* thrives in alkaline rivers, even those exhibiting moderate eutrophication. It can also be found in oligotrophic streams at altitudes up to 350m, where it is mildly tolerant of episodic acidity. Indeed, its absence from any lotic habitat is probably indicative of toxic conditions. Its presence has been confirmed on some offshore islands, including Clare Island, Co. Mayo.

The plasticity of its life cycle probably allows *B. rhodani* to inhabit this wide range of river types. Certainly the nymphs in soft-waters are considerably smaller than their counterparts from the more productive alkaline waters. Emergence patterns also vary. The life cycle ranges from univoltine to trivoltine, depending on the characteristics of its habitat. Some authorities consider that *B. rhodani* represents a complex of several different types which have yet to be differentiated (Engblom, 1996).

FIGURE 15: distinctive gills of *Baetis rhodani* Pictet (a) compared with *B. scambus* Eaton (b).

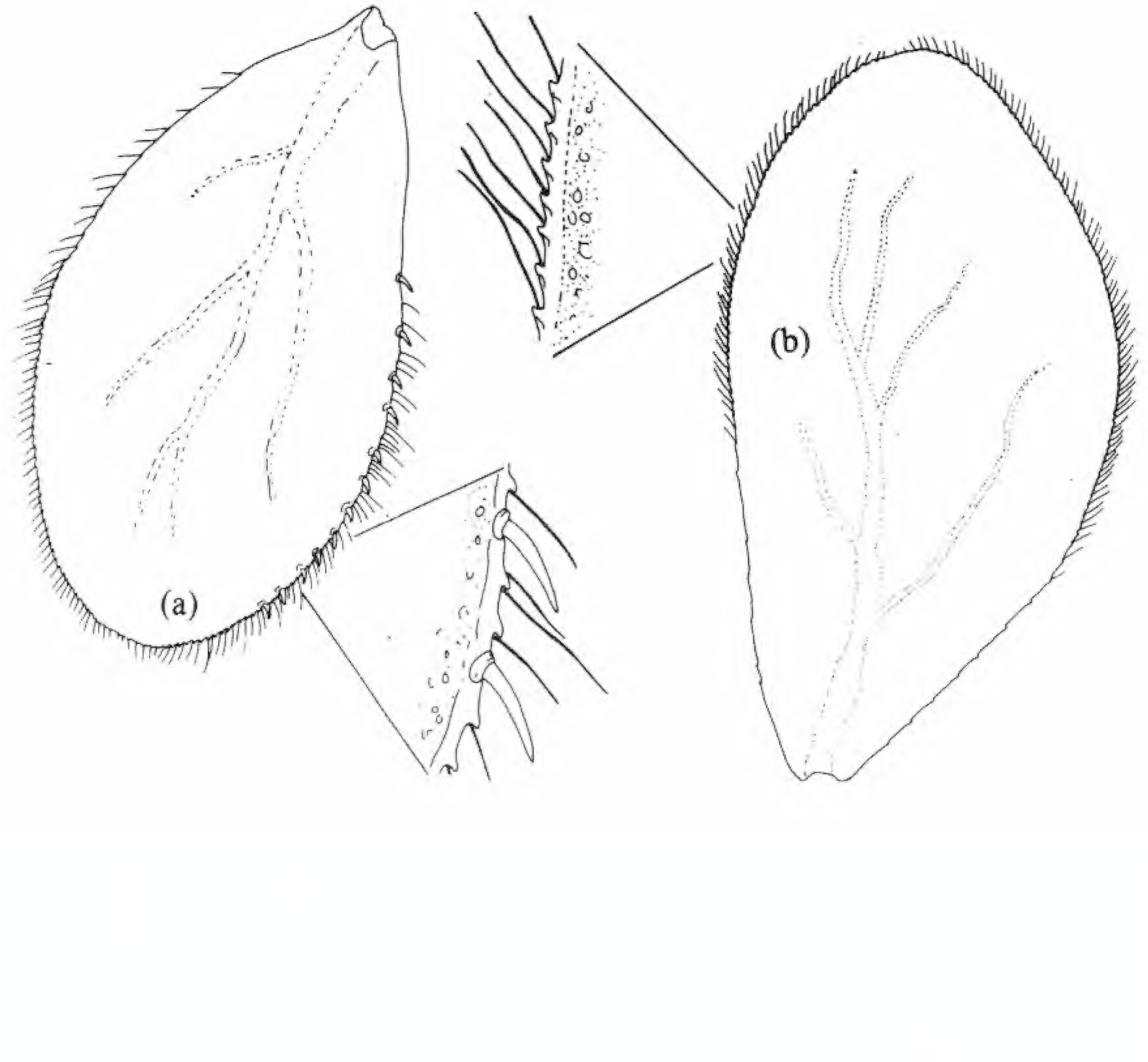
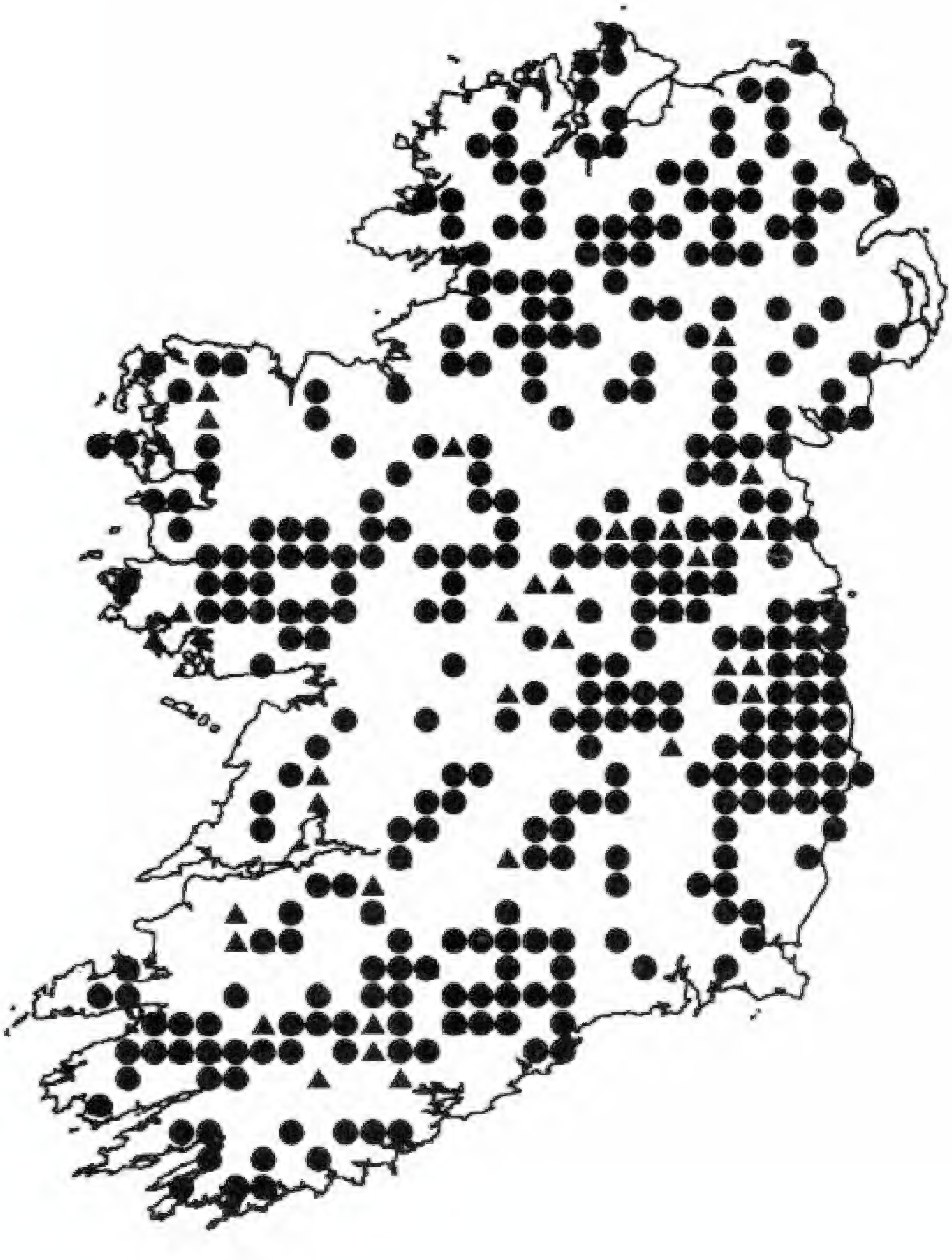


FIGURE 16: distribution of *Baetis rhodani* Pictet.
▲= pre 1970 ● = post 1970



Baetis atrebatinus Eaton, 1870 (Duns and Spinners - Dark Olive)

Baetis atrebatinus is the first of the two narrow-bodied members of the Baetidae to be found in Ireland and is confined to running waters. Because of its size it is easily mistaken for small nymphs of *Baetis rhodani*, but this difficulty can be overcome by examination of the distinctive maxillary palp, as illustrated in (Fig. 17).

B. atrebatinus has a patchy distribution (Fig. 18) with few new records since the 1970's. It is a relatively uncommon species throughout Europe, including Great Britain (Maitland, 1980). Harris (1952) considered it to be fairly widely distributed in Ireland and, in his manuscript, listed sixteen definite locations where it was found. Connolly and McCarthy (1993), who were responsible for the majority of the recent records of the species, found *B. atrebatinus* to be common in the Corrib catchment. They concluded that the species had a preference for alkaline waters. However, in the present study, *B. atrebatinus* has been located at only seven additional sites, despite an extensive search of potentially suitable areas. The distribution of this species warrants further investigation and information is required on its habitat requirements.

FIGURE 17: maxilla showing distinctive maxillary palp of _Baetis atrebatinus_ Eaton.

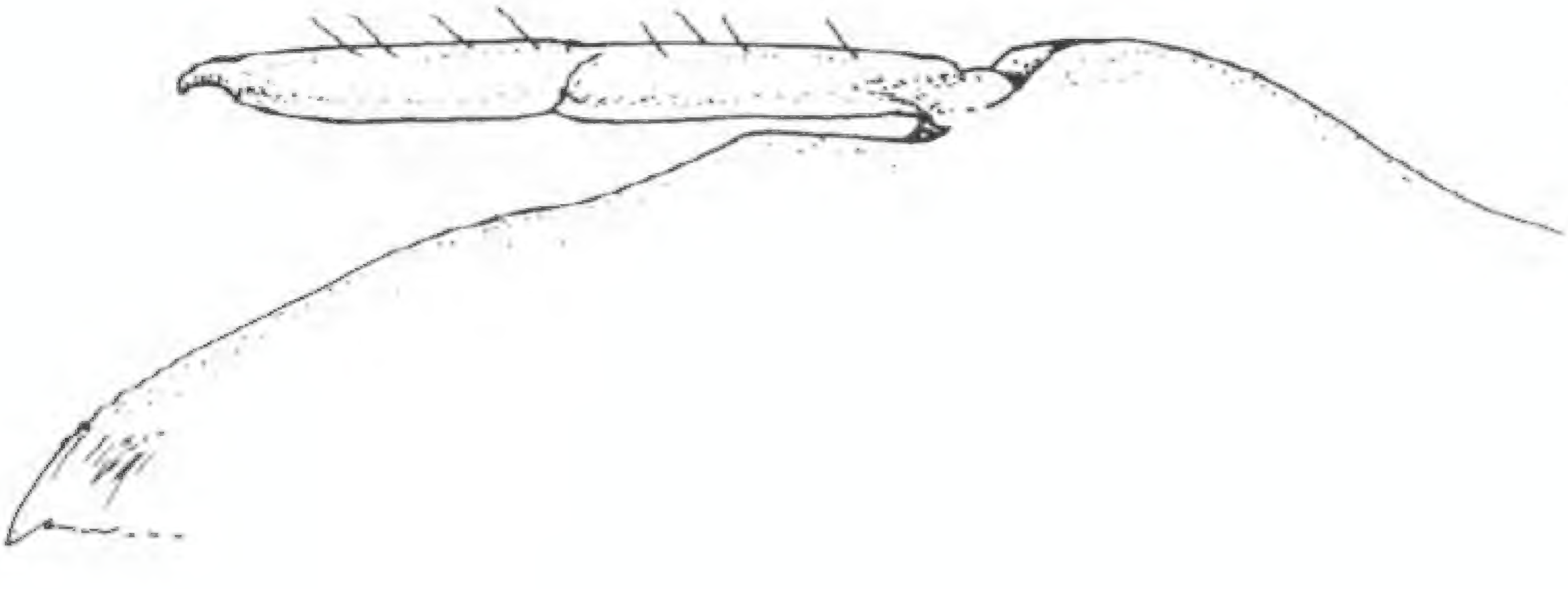
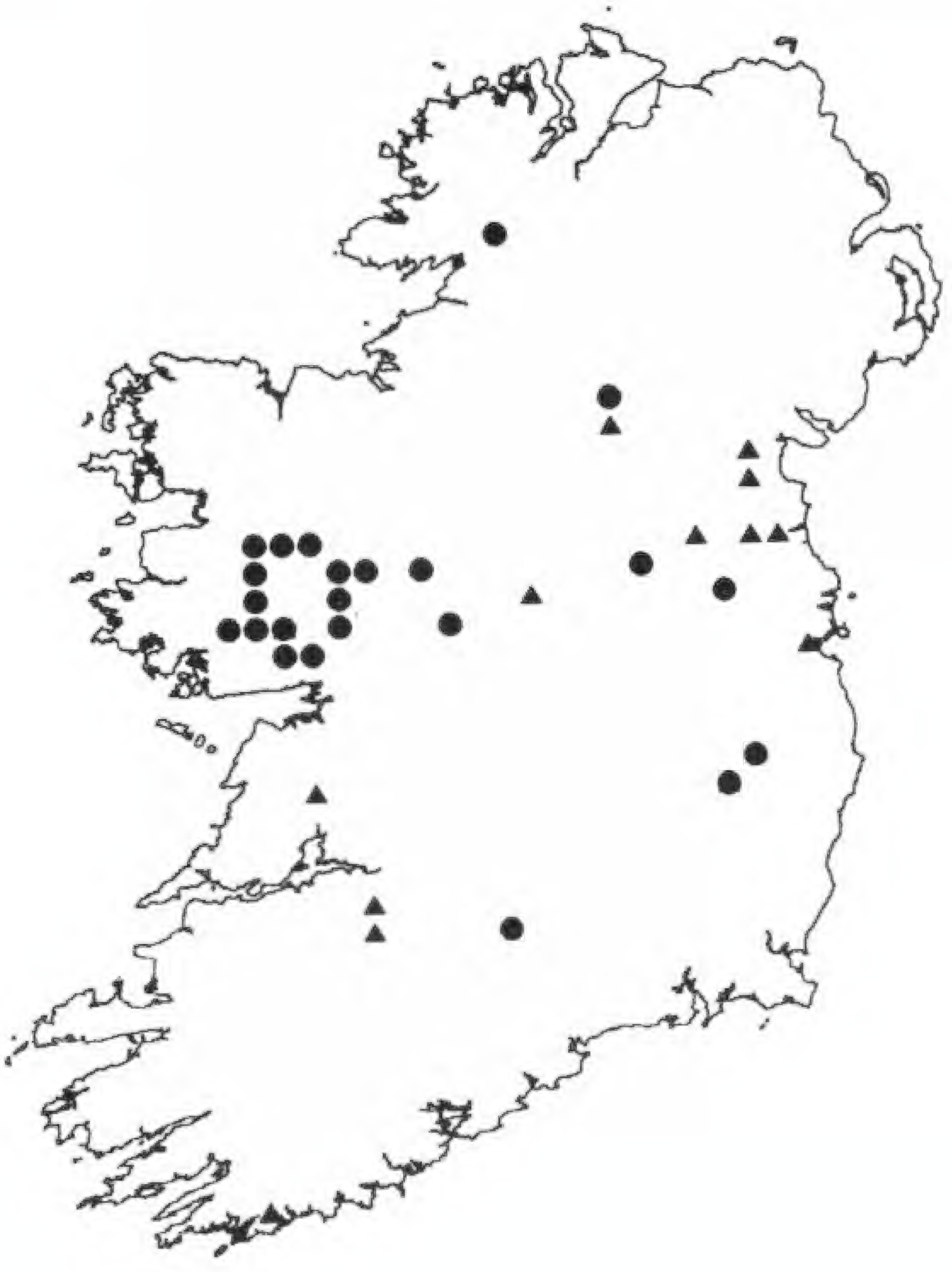


FIGURE 18: distribution of *Baetis atrebatinus* Eaton.
▲ = pre 1970 ● = post 1970



Baetis muticus (Linnaeus, 1758) (Duns and Spinners - Iron Blue, Female Spinner, Little Claret)

Baetis muticus, formerly known as *Baetis pumilus* Burmeister, is the second narrow-bodied baetid found in Ireland. Giller (1986) first drew attention to two distinctive diagnostic characters which distinguished *B. muticus* from the other Baetidae. The key characters were the close approximation of the bases of its antennae (Fig. 19), together with its overall darkish colour.

It is the second commonest member of this family Baetidae and has a similar widespread distribution pattern (Fig. 20) to that of *B. rhodani*. It is also predominantly a riverine species but has been picked up in a small number of lentic habitats. *B. muticus* generally does not occur in large numbers. Occasionally the species is found in high densities among aquatic macrophytes in limestone rivers such as the River Nore. It also appears to be less tolerant of acidic conditions than *B. rhodani*.

FIGURE 19: head of _Baetis muticus_ (L.).

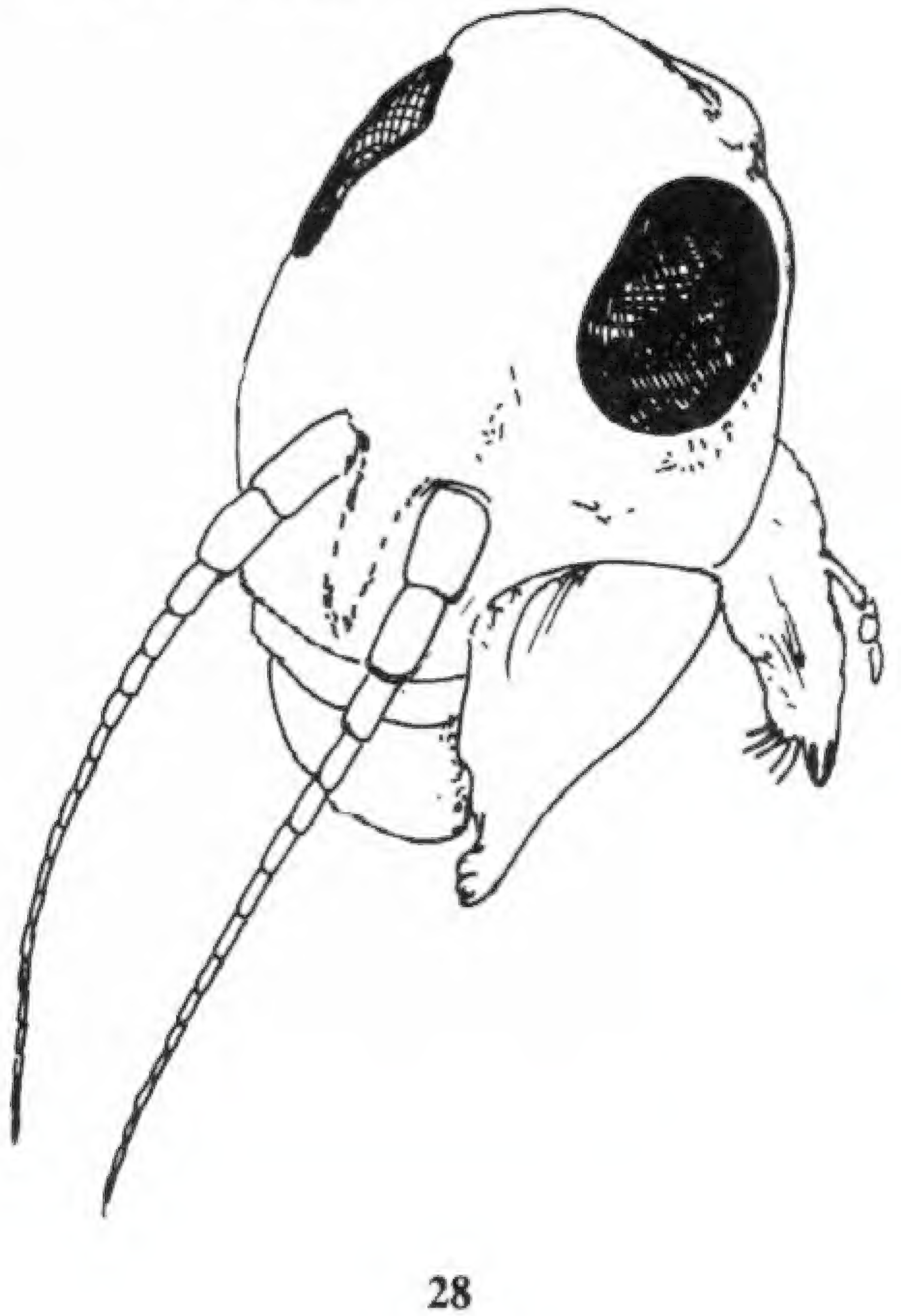
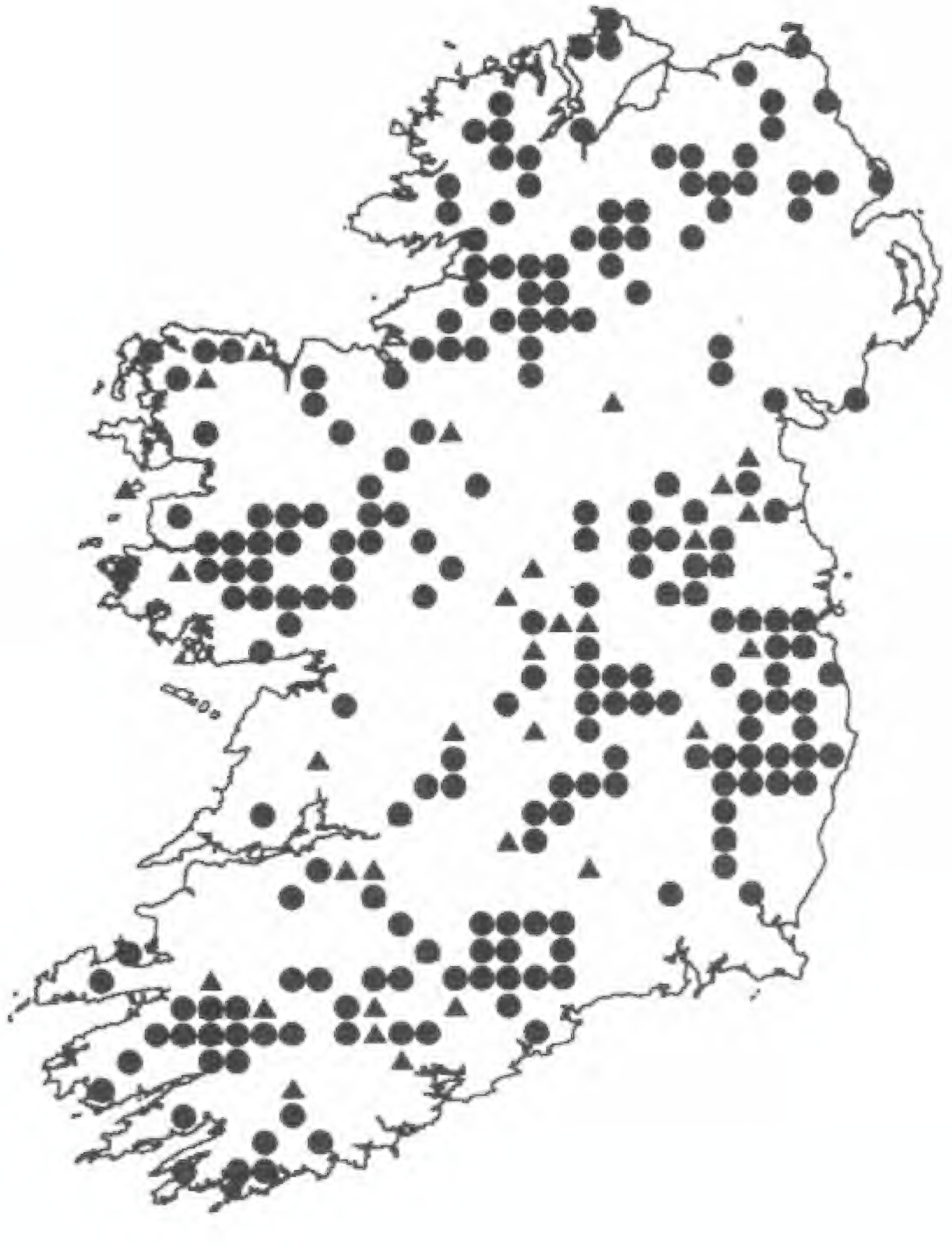


FIGURE 20: distribution of *Baetis muticus* (L.).

▲= pre 1970 ● = post 1970



***Centroptilum luteolum* (Müller, 1776) (Duns and spinners - Pale Watery or Little Sky Blue)**

Centroptilum luteolum has a widespread distribution in Europe, Algeria and North America. It is also ubiquitous in Ireland. According to King and Halbert (1910), Frost (1942), Macan and Lund (1954), Harris (1952), Whelan (1980a), Dowling *et al.* (1981) and Connolly (1986) it occurs in both lentic and lotic habitats. Its general habitus is illustrated in Fig. 21. The distinctive beech-shaped gills with pointed tips aid its separation from other genera within the Baetidae.

The species is widespread (Fig. 22) but the numbers present at a given site are generally low. It exhibits a preference for vegetated areas with low gradients and slow currents. For this reason it is often absent from collections taken solely in riffle habitats.

Although a common component of the ephemeropteran fauna, the life cycle of the species requires further clarification. Whelan (1980a) found that adult emergence records supported a bivoltine summer cycle in Lough Sheelin but the nymphal records indicated a univoltine cycle. In Great Britain it is considered to be bivoltine (Elliott *et al.*, 1988).

FIGURE 21: habitus of *Centroptilum luteolum* (Müller).

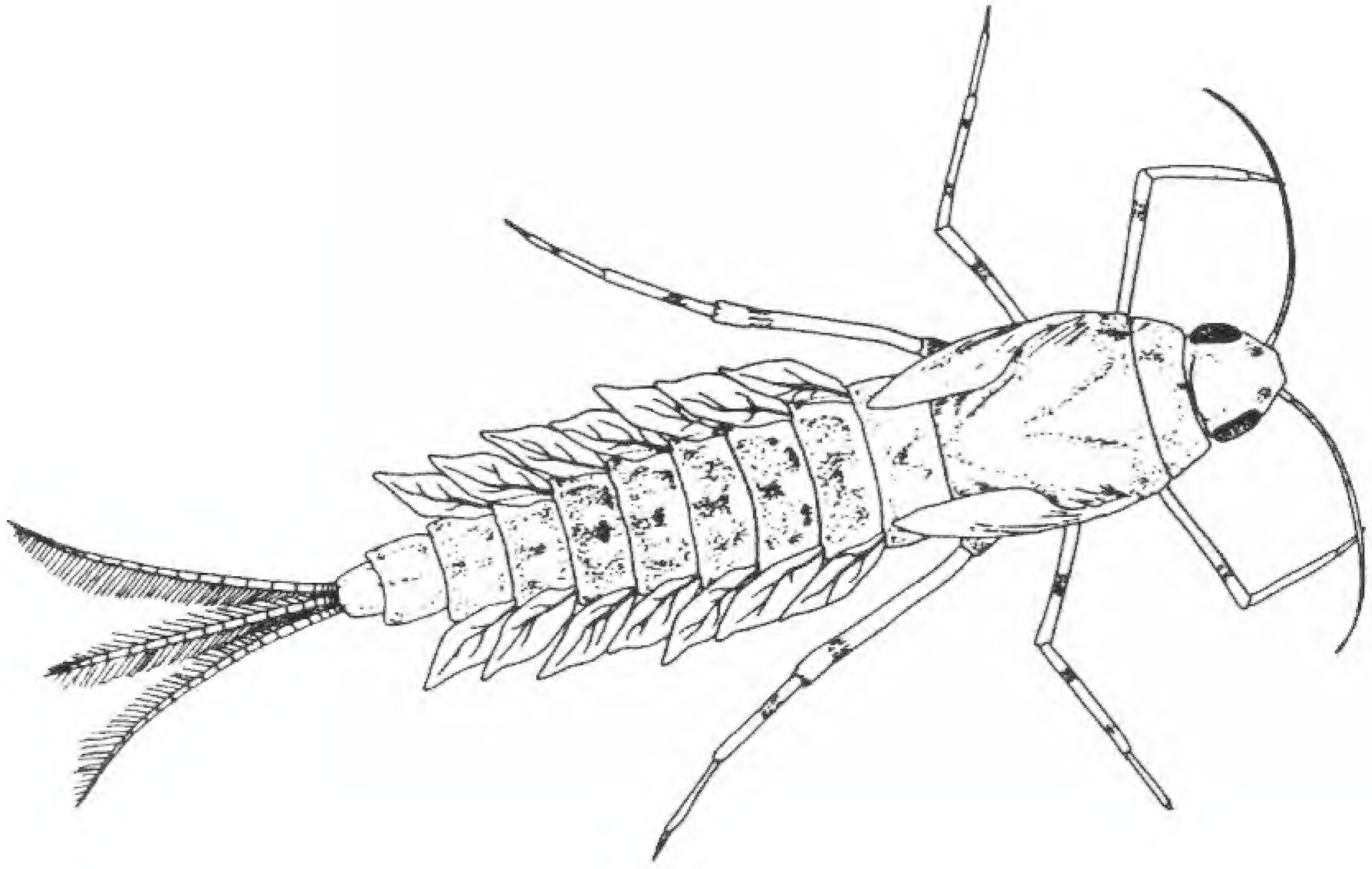
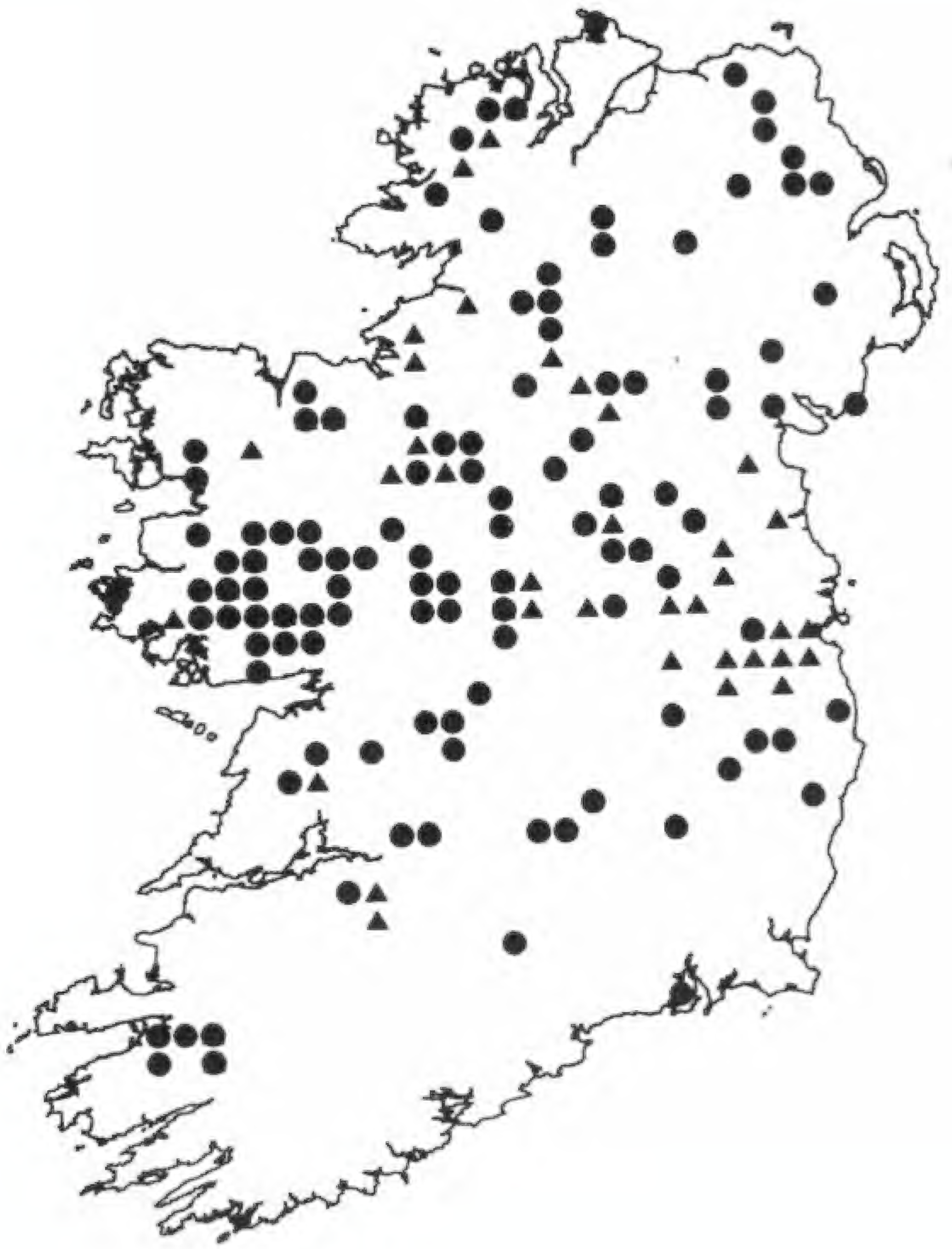


FIGURE 22: distribution of *Centroptilum luteolum* (Müller).

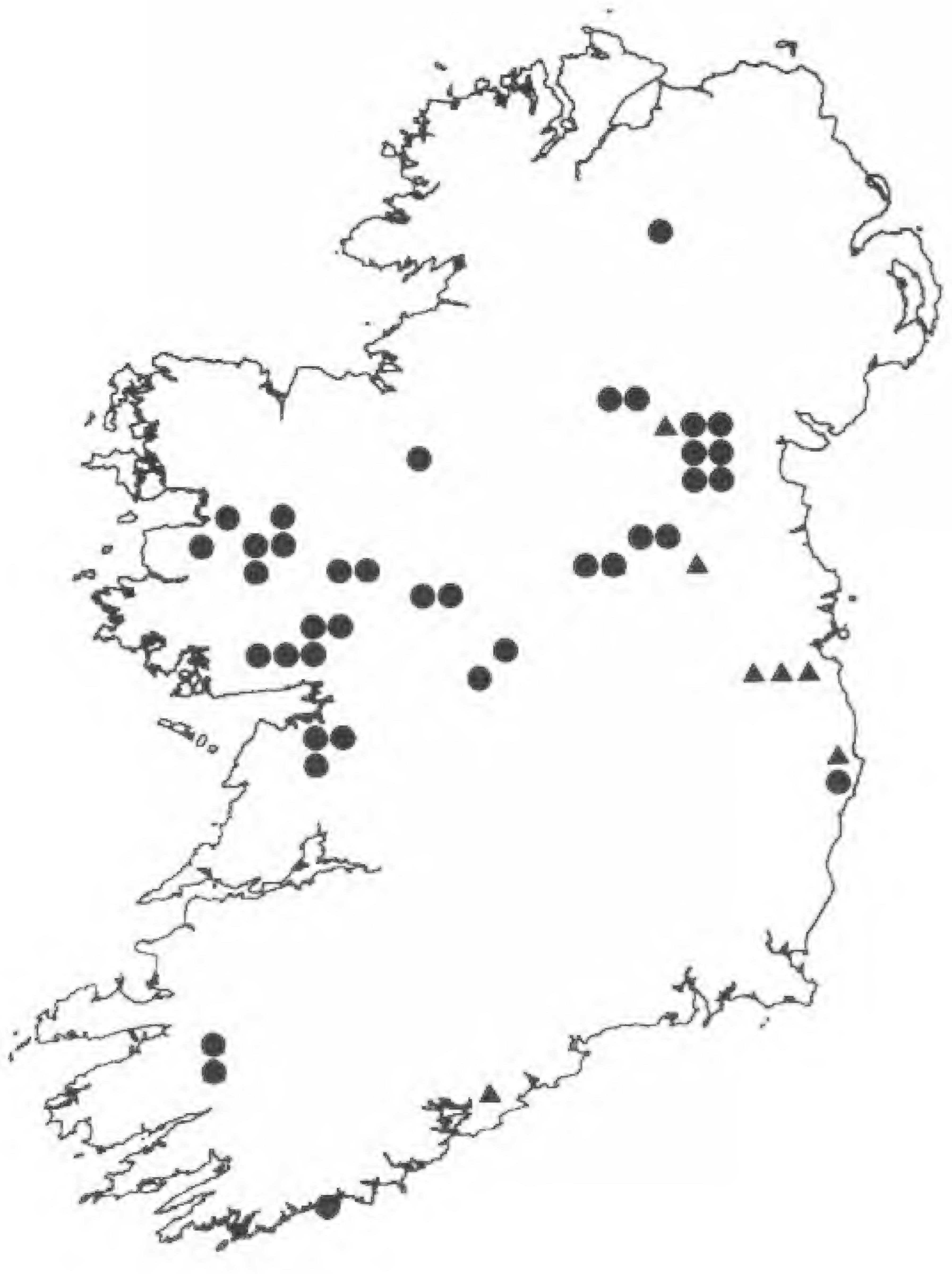
▲= pre 1970 ● = post 1970



***Cloeon dipterum* (Linnaeus, 1761) (Duns and Spinners - Pond Olive or Lake Olive)**

Cloeon dipterum has a wide geographical distribution in Ireland (Fig. 23). Harris (1952) stated that this species thrives in small water bodies and for that reason is able to cope successfully with a wide range of temperature, pH and oxygen levels. It can also be found in parts of the river where the current is slow. The collections of *C. dipterum* in this study were taken predominately from ponds and small lakes. It was also recorded in turloughs and brackish-water lagoon systems. Its tolerance of high water temperatures and low oxygen content allow it to adapt and thrive in ponds and temporary ponds or turloughs.

FIGURE 23: distribution of *Cloeon dipterum* (Linnaeus).
▲= pre 1970 • = post 1970

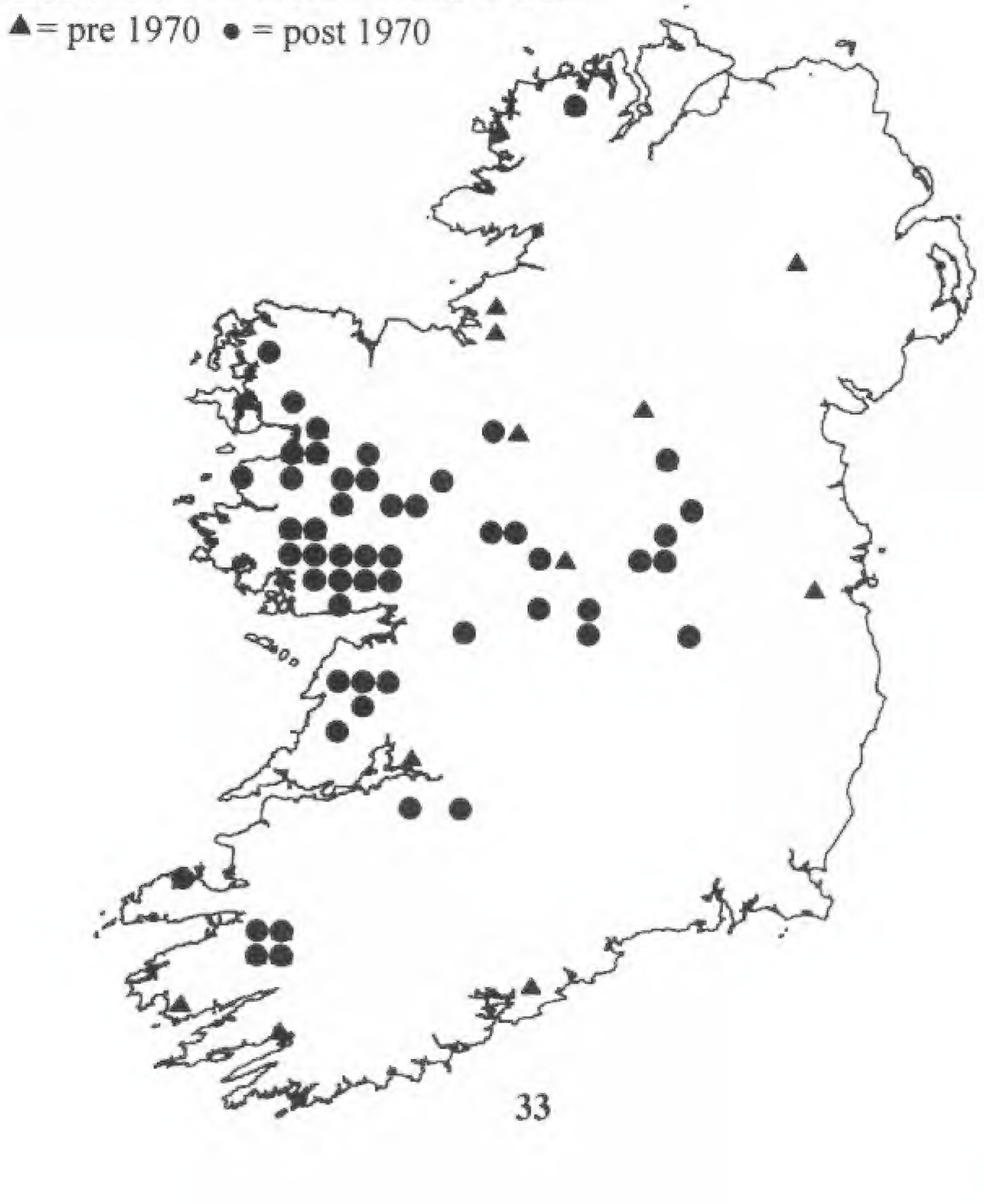


Cloeon simile Eaton, 1870 (Dun and Spinner - Lake Olive)

This is another common species (Fig. 24) which has a preference for lentic habitats, particularly sheltered bays, and is often found in association with *Cloeon dipterum*. It may be encountered in most of the limestone lakes in Ireland, especially in sheltered bays among vegetation. It should be noted that the species is not excluded from oligotrophic waters, as evidenced by its occurrence in Maumwee, Co. Galway and Lough Veagh, Co. Donegal. However, in these systems, numbers tend to be low. As shall be seen later in this paper, *Leptophlebia vespertina* replaces *C. simile* in these nutrient-poor and predominantly acidic waters.

Whelan (1980a) has shown that temperature appears to have a strong influence on the life cycle of *C. simile* in the Sheelin catchment. A bivoltine life-cycle is the more usual for *C. simile* although Bracken and Murray (1973) found only a single peak in two small lakes; Lough Avaul (in August) and Lough Aderry (in September) in south-western Ireland.

FIGURE 24: distribution of _Cloeon simile_ Eaton.



***Procloeon bifidum* (Bengtsson, 1912) (Duns and Spinners - Pale Evening)**

Formerly known as *Procloeon rufulum* Eaton and *Procloeon pseudorufulum* Kimmins, this is predominately a lotic species but it has also been located in a small number of lakes such as Lough Gill, Co. Sligo. It has a similar habitat preference in Great Britain (Maitland, 1980). In riverine habitats it is usually confined to areas with sluggish flow, generally in the lower reaches. It can easily be confused with *Baetis* spp., especially if the caudal filaments are missing. The asymmetrical gills of *P. bifidum*, together with the presence of long spines at the lateral margins on the 10th abdominal tergum, aid its recognition (Fig. 25). From the distribution map (Fig. 26), it can be seen that *Procloeon bifidum* is relatively uncommon, with most records pre-1970. This species is probably under-recorded, since it is absent from riffles.

FIGURE 25: body form of *Procloeon bifidum* (Bengtsson), showing distinctive gills.

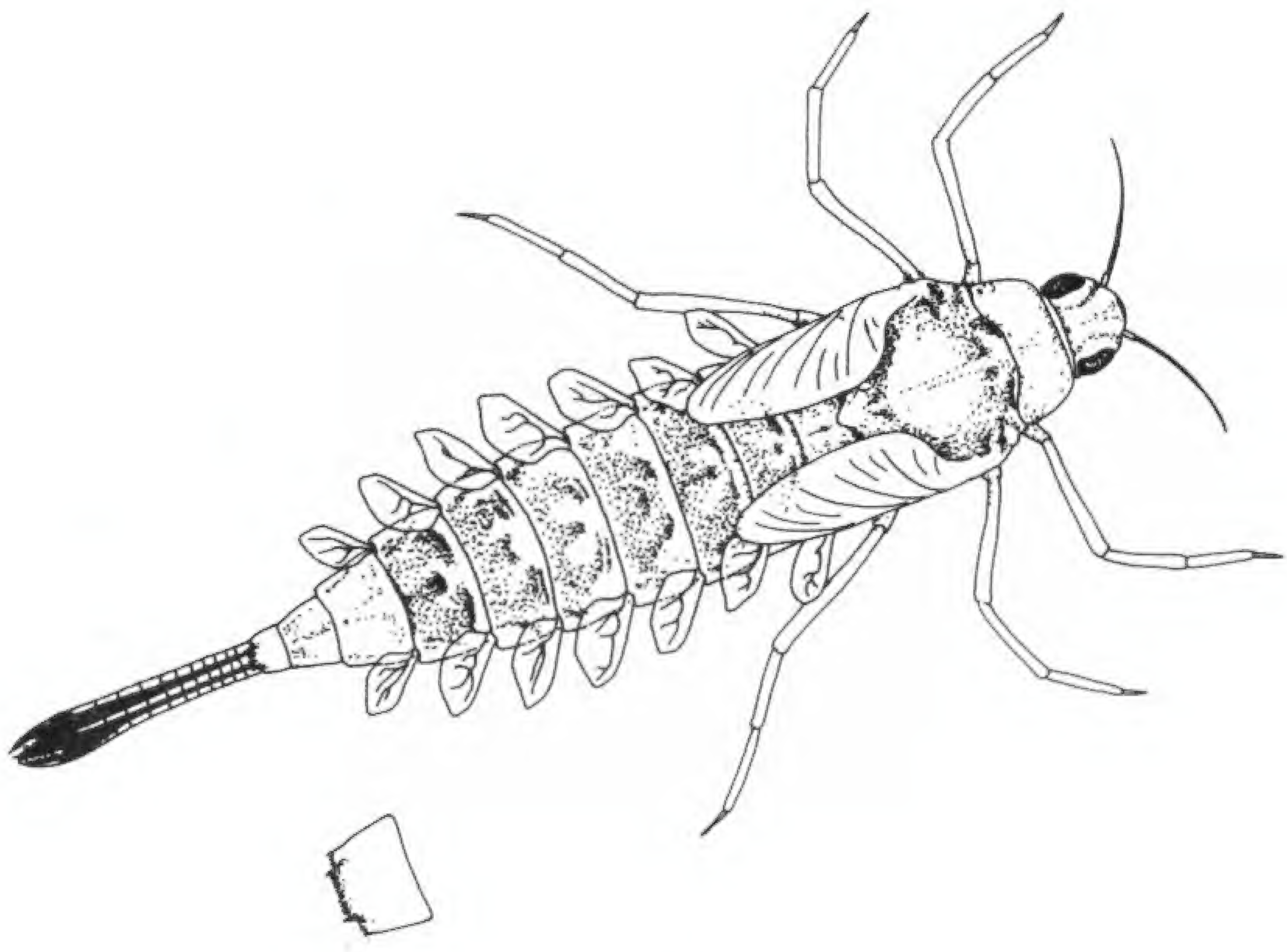


FIGURE 26: distribution of *Procloeon bifidum* (Bengtsson).

▲= pre 1970 ● = post 1970

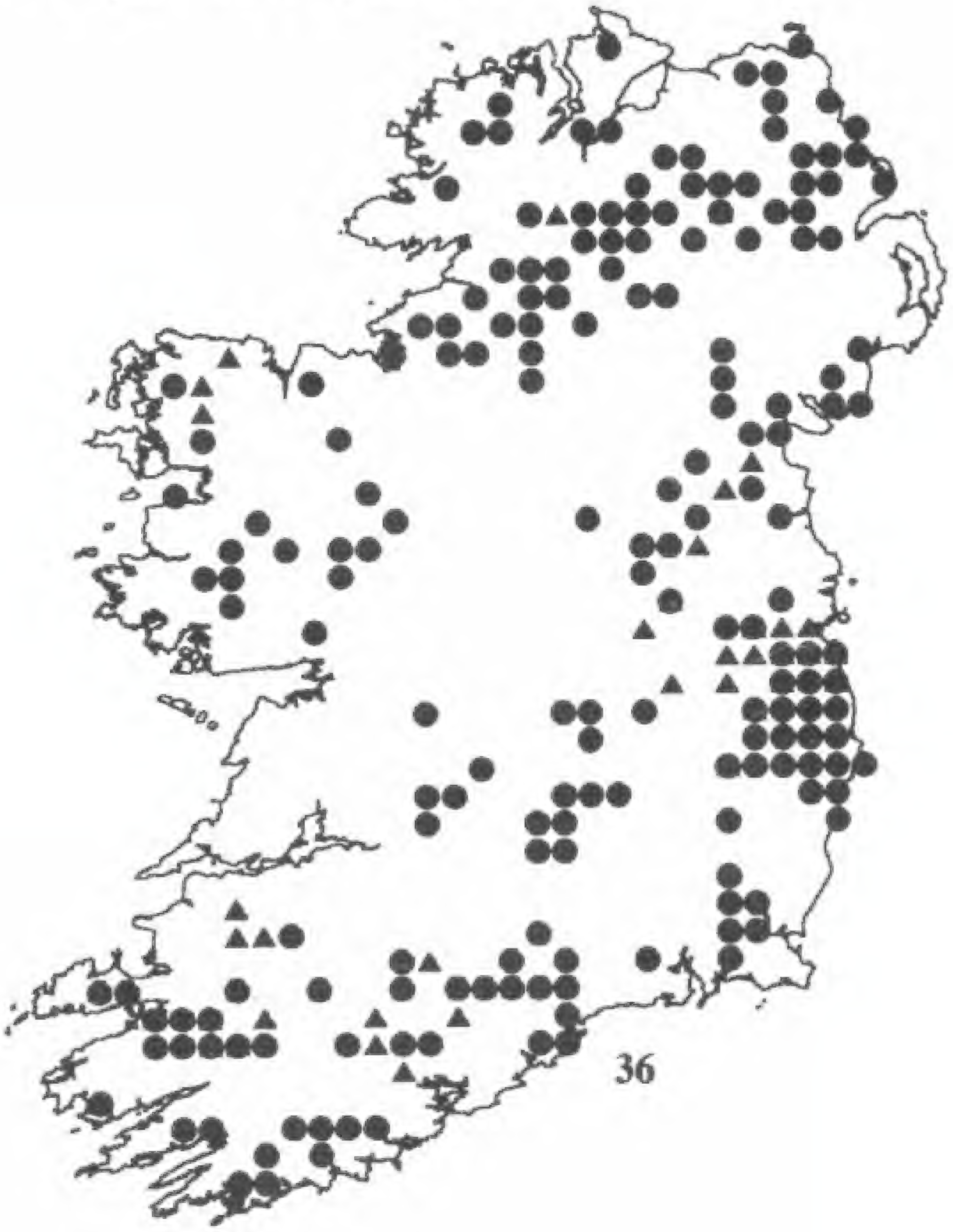
Heptageniidae

This family is represented by four genera; *Rhithrogena*, *Ecdyonurus*, *Heptagenia* and *Electrogena*. All four produce relatively large, flat-bodied nymphs. Together with the Baetidae, they form the core of the ephemeropteran community in riverine systems. Their absence is generally indicative of impaired water quality.

Rhithrogena semicolorata **(Curtis, 1834) (Duns and Spinners - Olive Upright or Yellow Upright)**

This species is ideally adapted to torrential conditions. The presence of a modified set of gills in the form of a suction cup allows the nymph to cling to the stones. It is, therefore, widespread in riffle areas of rivers with moderate to fast flows, especially where the substrate is stony. It is ideally adapted to high-gradient mountain streams and is relatively tolerant of episodic acidity. It is a widespread species throughout Ireland, as can be seen in Fig. 27. The life history of the species is fairly well known, being univoltine with overwintering larvae.

FIGURE 27: distribution of *Rhithrogena semicolorata* (Curtis).
▲= pre 1970 ● = post 1970



Rhithrogena germanica Eaton, 1870 (Duns and Spinners - March Brown or Great Red Spinner)

Rhithrogena germanica was formerly known as *Rhithrogena haarupi* Esben-Petersen. It has always been regarded as a rare species in Ireland. Harris (1952) noted that it had been recorded only on the Rivers Liffey and Dodder. Kennedy (pers. comm.) is of the opinion that this species has largely disappeared from these waters in recent years.

Some consider the nymphs of this species to be indistinguishable from those of *Rhithrogena semicolorata*. The characters described by Elliott *et al.* (1988) have been used to identify a number of specimens in this study. However, in the absence of adult material, no firm conclusions can be made about its current status. The distribution map (Fig. 28) suggests that *R. germanica* is largely confined to the eastern region of the country and is a rare species.

FIGURE 28: distribution of _Rhithrogena germanica_ Eaton.

▲= pre 1970 ● = post 1970

***Heptagenia sulphurea* (Müller, 1776) (Duns and Spinners - Little Yellow May)**

Heptagenia sulphurea is a common component of the fauna in rivers with moderate flows, particularly the main channel of large rivers such as the Shannon, Barrow, Nore and Blachwater. It also occurs on the shores of lakes in limestone regions (Fig. 29). It generally avoids the more acidic upland streams.

Students find the separation of *H. sulphurea* and *Ecdyonurus dispar* difficult especially if the nymphs are small. Attention should be drawn to the lack of a backward projection on the pronotum of *H. sulphurea* and its distinctive dark colouration, as illustrated in Fig. 30.

FIGURE 29: distribution of *Heptagenia sulphurea* (Müller).
▲= pre 1970 ● = post 1970

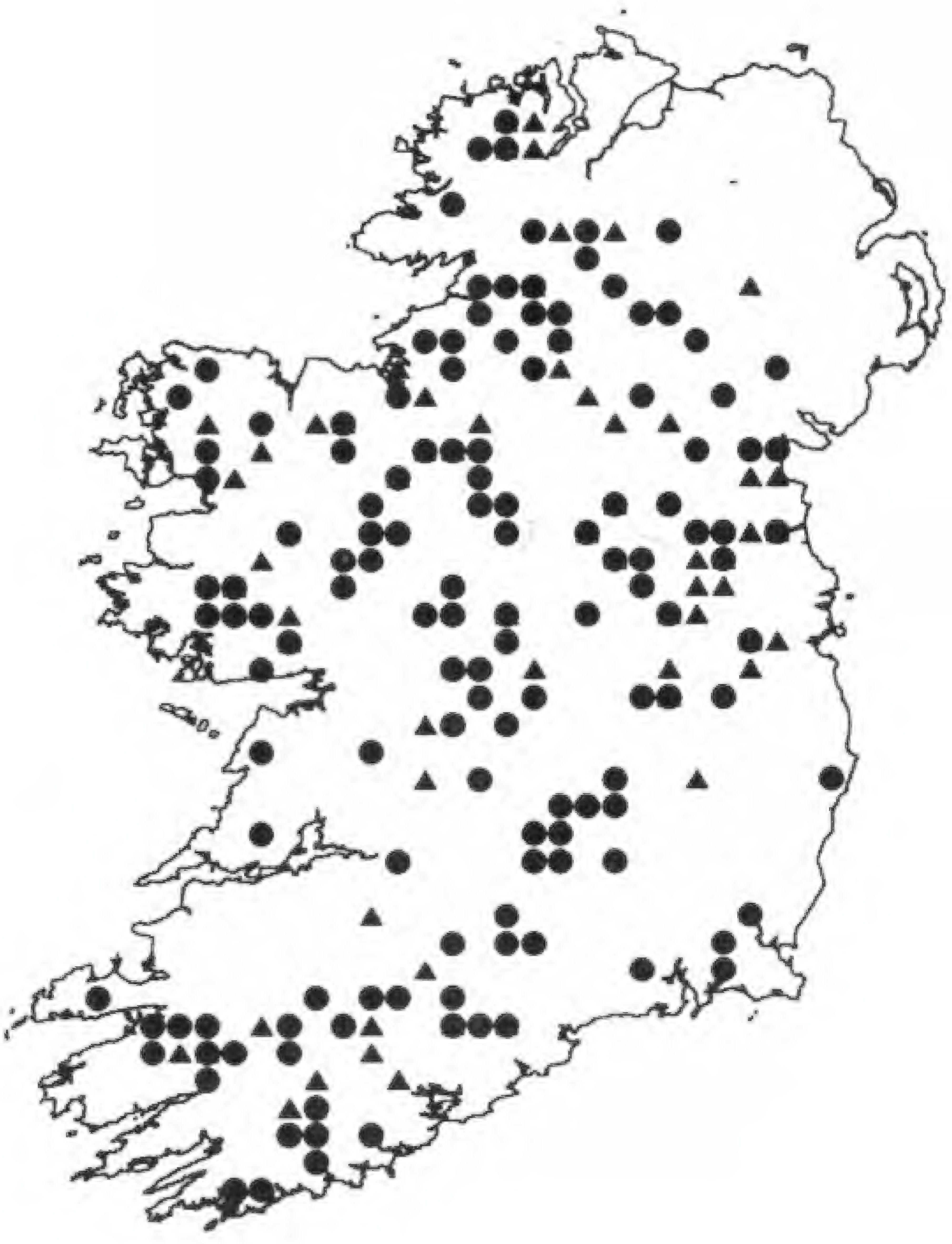
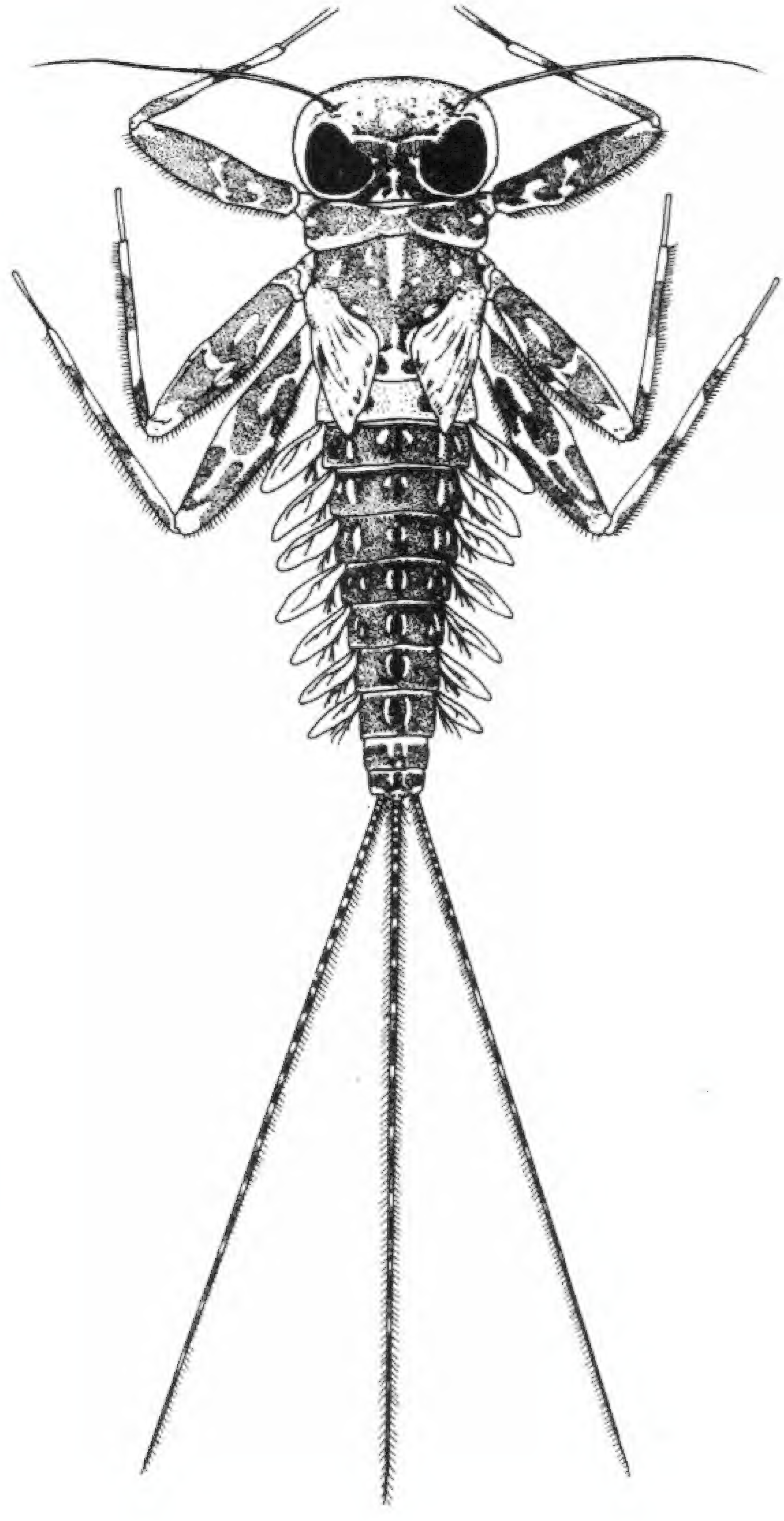


FIGURE 30: habitus of *Heptagenia sulphurea* (Müller).

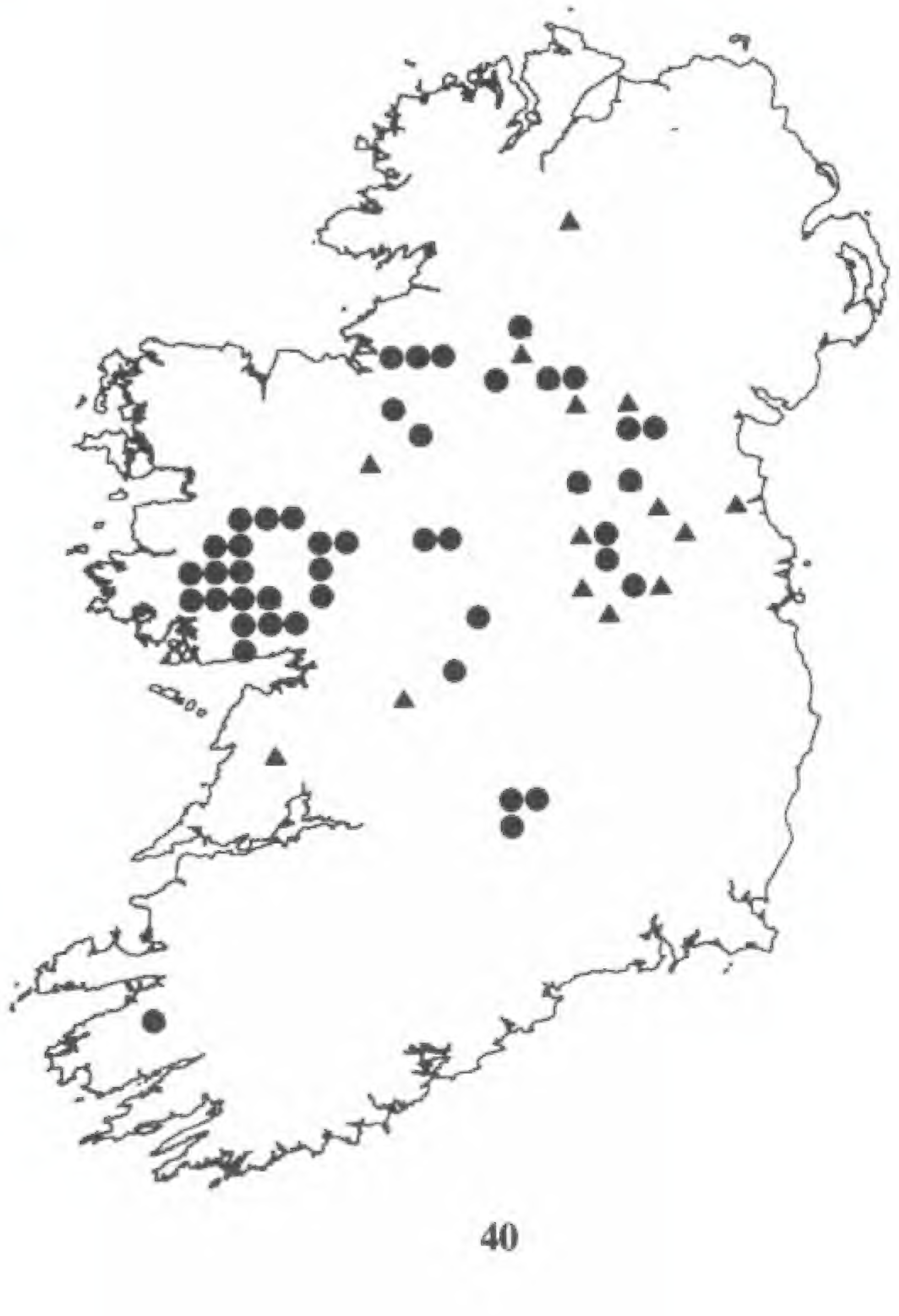


***Heptagenia fuscogrisea* (Retzius, 1783) (Duns and Spinners - Brown May)**

Heptagenia fuscogrisea generally has a strong preference for alkaline rivers and lakes of the midlands. This is generally borne out on the distribution map (Fig. 31). However, Connolly (1986), while agreeing that *H. fuscogrisea* occurs in alkaline sites in reasonable numbers, confirmed that he also found greater numbers of the nymphs at acidic sites. It is apparently the only member of the Heptageniidae that selects well-vegetated areas.

H. fuscogrisea is considered scarce or local in Great Britain and in many other parts of Europe. It has been included as a Nationally Notable Species in Great Britain (Bratton, 1990). Its widespread distribution in Ireland, across a wide range of waters of differing chemical status is, therefore, worth highlighting.

FIGURE 31: distribution of *Heptagenia fuscogrisea* (Retzius).
▲= pre 1970 ● = post 1970



Electrogena lateralis **(Curtis, 1834) (Duns and Spinners - Dark Dun)**

Until recently, *Electrogena lateralis* was known as *Heptagenia lateralis* Curtis. Its re-classification from the genus *Heptagenia* was proposed by Zurwerra and Tomka (1985). The femur of *Electrogena* has long bristles which are at least half as wide as the femur itself (Fig. 32), whereas those of *Heptagenia* are considerably shorter. The mandibles of *E. lateralis* are also distinctive. The incisor region of both mandibles have strong prothecal setae but lack the short, fine setae. In *Heptagenia* the right mandible has no prothecal setae and only one is found on the left mandible (Zurwerra and Tomka, 1985). *E. lateralis* is the only member of this genus found in Ireland. A further species, *E. affinis* (Eaton, 1885), was discovered in Yorkshire, Great Britain (Blackburn *et al.*, 1998).

E. lateralis is dorso-ventrally compressed and, therefore, morphologically suited for clinging to rocky substrata, as were the two previous species. It is widely distributed in Ireland (Fig. 33) and in Britain. Habitats include fast-flowing stony streams or stony, wave-washed lake shores (Elliott *et al.*, 1988). Harris (1952) stated that this species was confined to the mountainous counties bordering limestone regions and provides an interesting contrast to the previous species, which favours alkaline regions. In the Corrib area, it was most abundant at sites where levels of pH, conductivity, sodium and calcium hardness were low (Connolly, 1986). The recent records for *H. lateralis* generally agree with these views. One exception, however, would be Lough Sheelin (Whelan, 1980a), where levels of dissolved ions are high.

FIGURE 32: characteristic leg of *Electrogena lateralis* (Curtis).

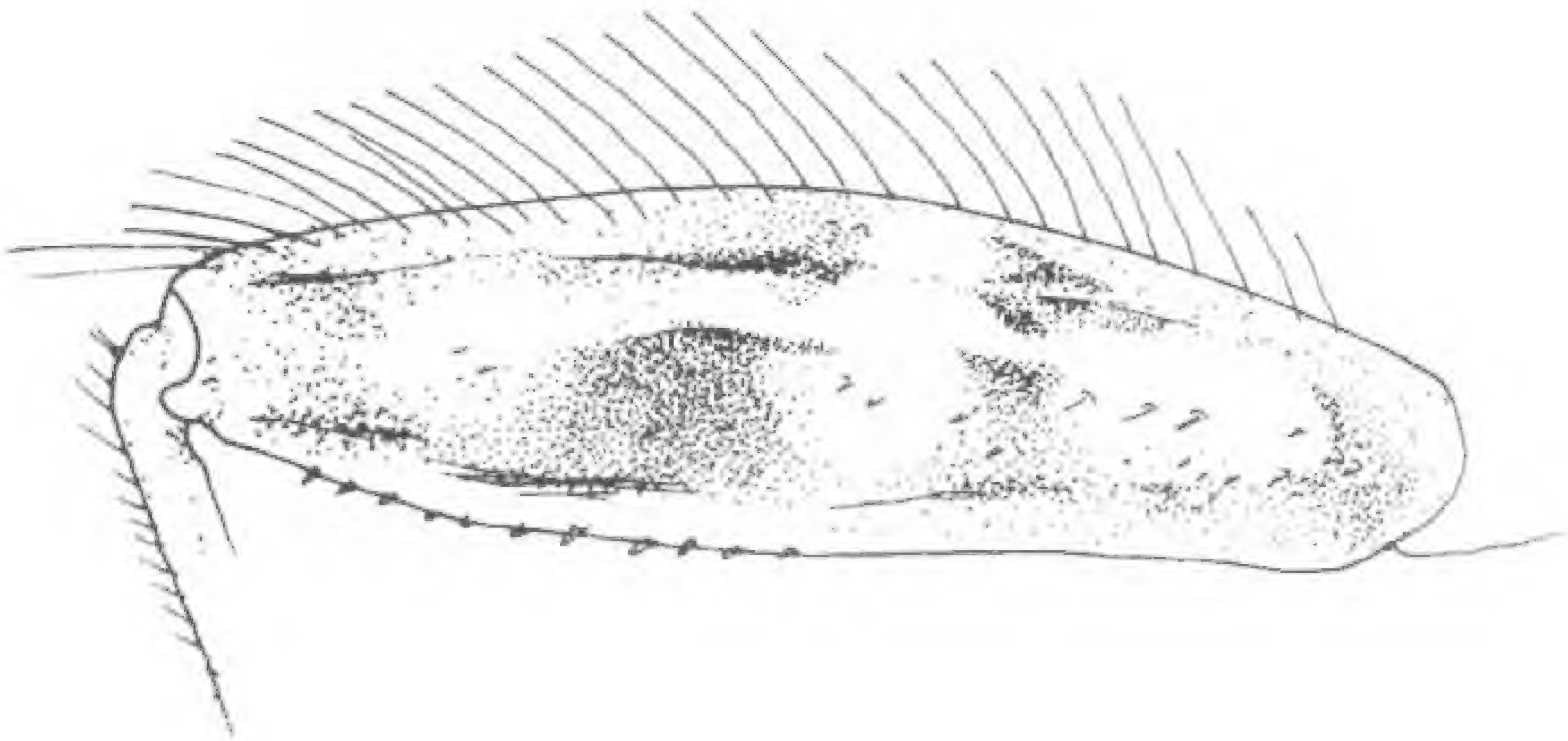
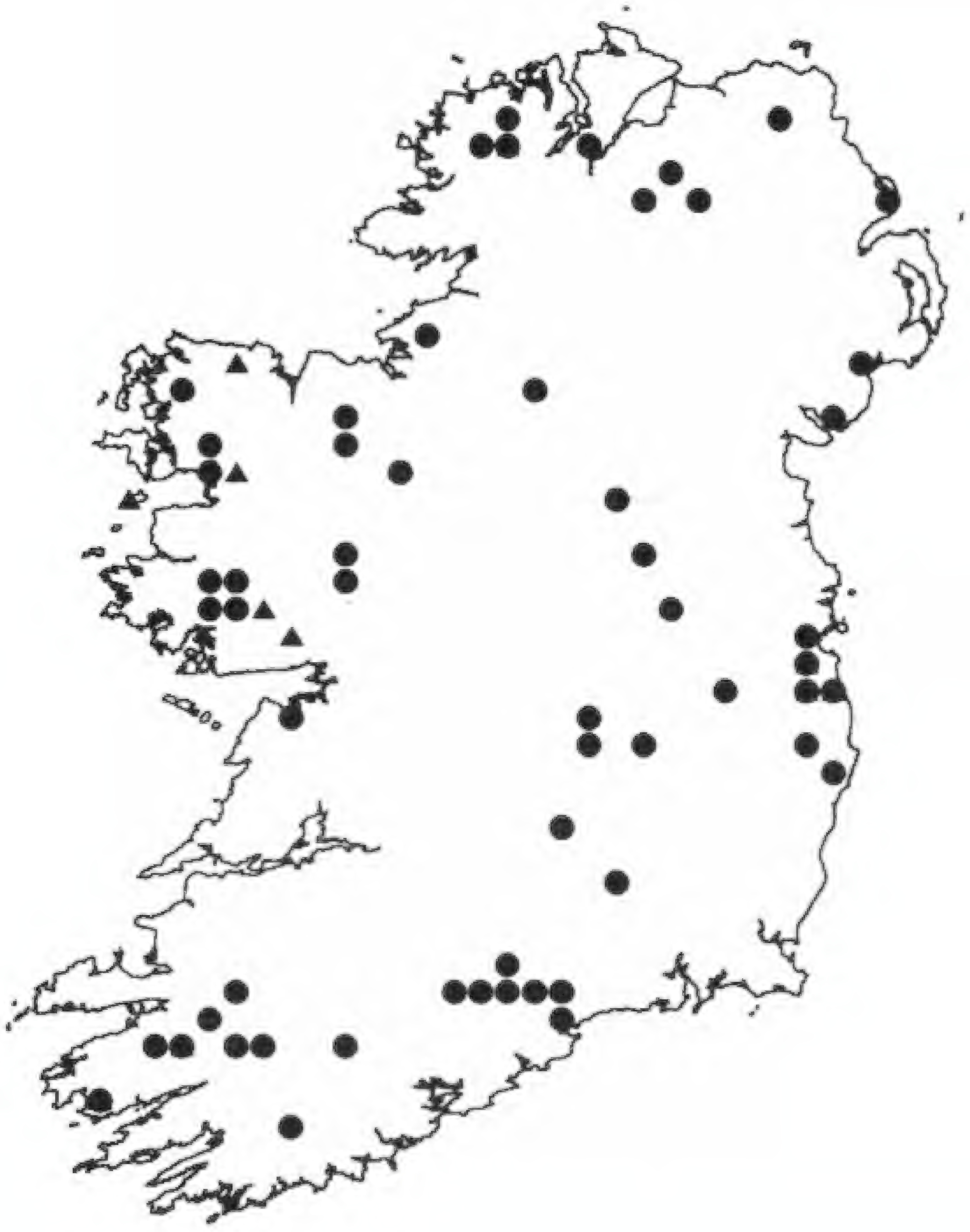


FIGURE 33: distribution of *Electrogena lateralis* (Curtis).

▲= pre 1970 ● = post 1970



Ecdyonurus

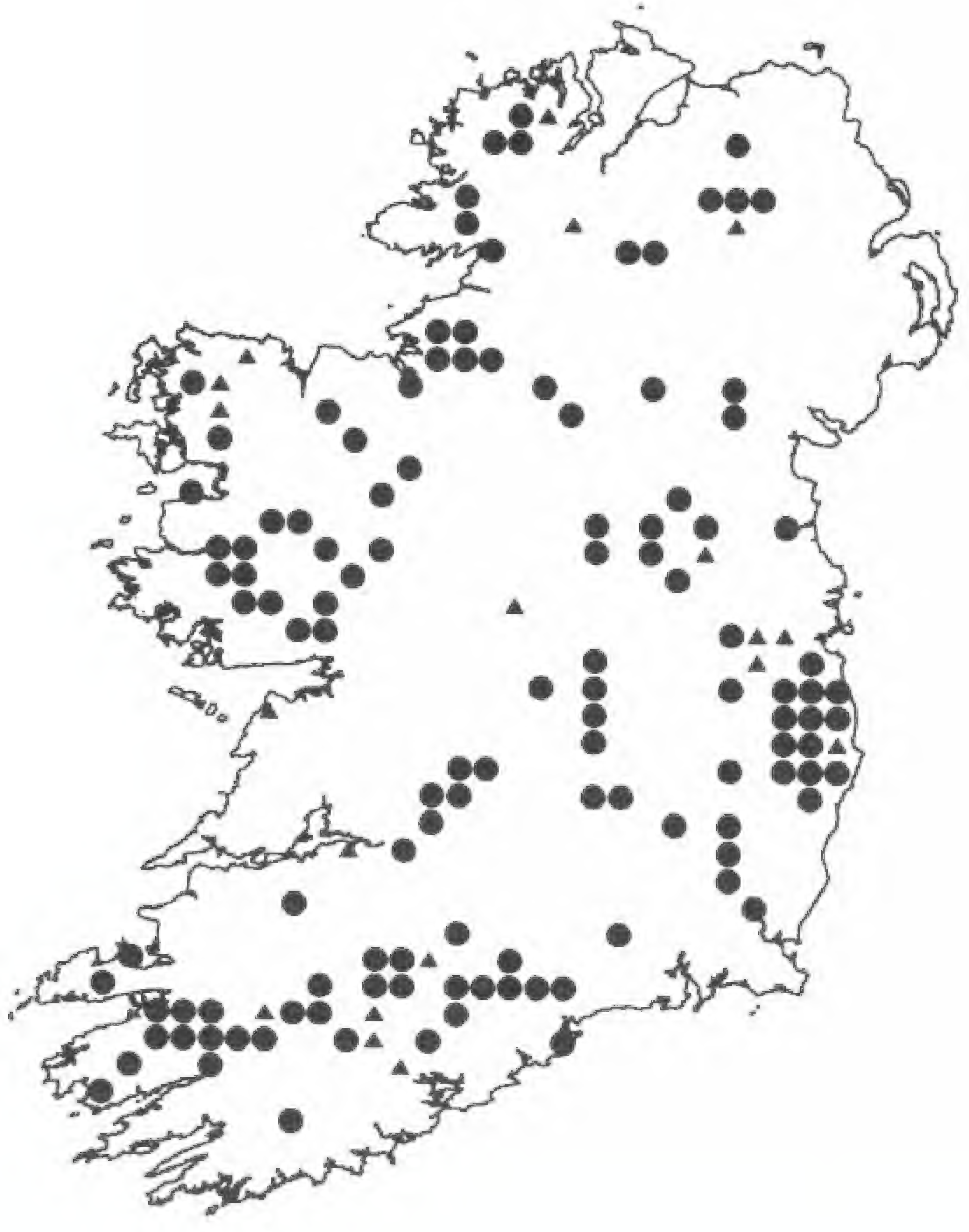
There are taxonomic uncertainties associated with the separation of *Ecdyonurus venosus*, *Ecdyonurus dispar*, *Ecdyonurus insignis* and *Ecdyonurus torrentis*. The seventh pair of gills is the first taxonomic structure to be examined. Unfortunately, specimens are easily damaged by routine kick sampling, with subsequent loss of these gills. To ensure identification to species level, a number of specimens should be collected by hand, thus eliminating possible loss of the fragile gill structures.

The nymphs of all four species possess dorso-ventral compression of the body as an adaptation to crawling between, over and on stones in fast currents. They are all fairly common and, provided that the river is relatively clean, at least one of the four species should appear in the samples.

***Ecdyonurus venosus* (Fabricius, 1775) (Duns and Spinners - Late March Brown)**

Ecdyonurus venosus is a common species (Fig. 34) typical of rivers and streams with relatively fast currents and stony substrates. It tolerates waters of varying ionic composition, but probably predominates in oligotrophic systems where it is often found in association with *Rhithrogena semicolorata*. However, *E. venosus* gradually replaces *R. semicolorata* as the dominant heptageniid as mountain streams descend from their upper sections to the semi-upland reaches. Connolly (1986) recorded a greater preponderance of this species in the oligotrophic rivers of the Corrib catchment.

FIGURE 34: distribution of *Ecdyonurus venosus* (Fabricius).
▲= pre 1970 ● = post 1970



***Ecdyonurus torrentis* Kimmins, 1942**

Ecdyonurus torrentis is one of our rarest ephemeropterans (Fig. 35). It was first recorded by Clabby and Bracken (1976) in a mountain stream in Co. Wicklow. Few specimens have since been recovered. Its current status and habitat requirements require further study.

FIGURE 35: distribution of *Ecdyonurus torrentis* Kimmins.

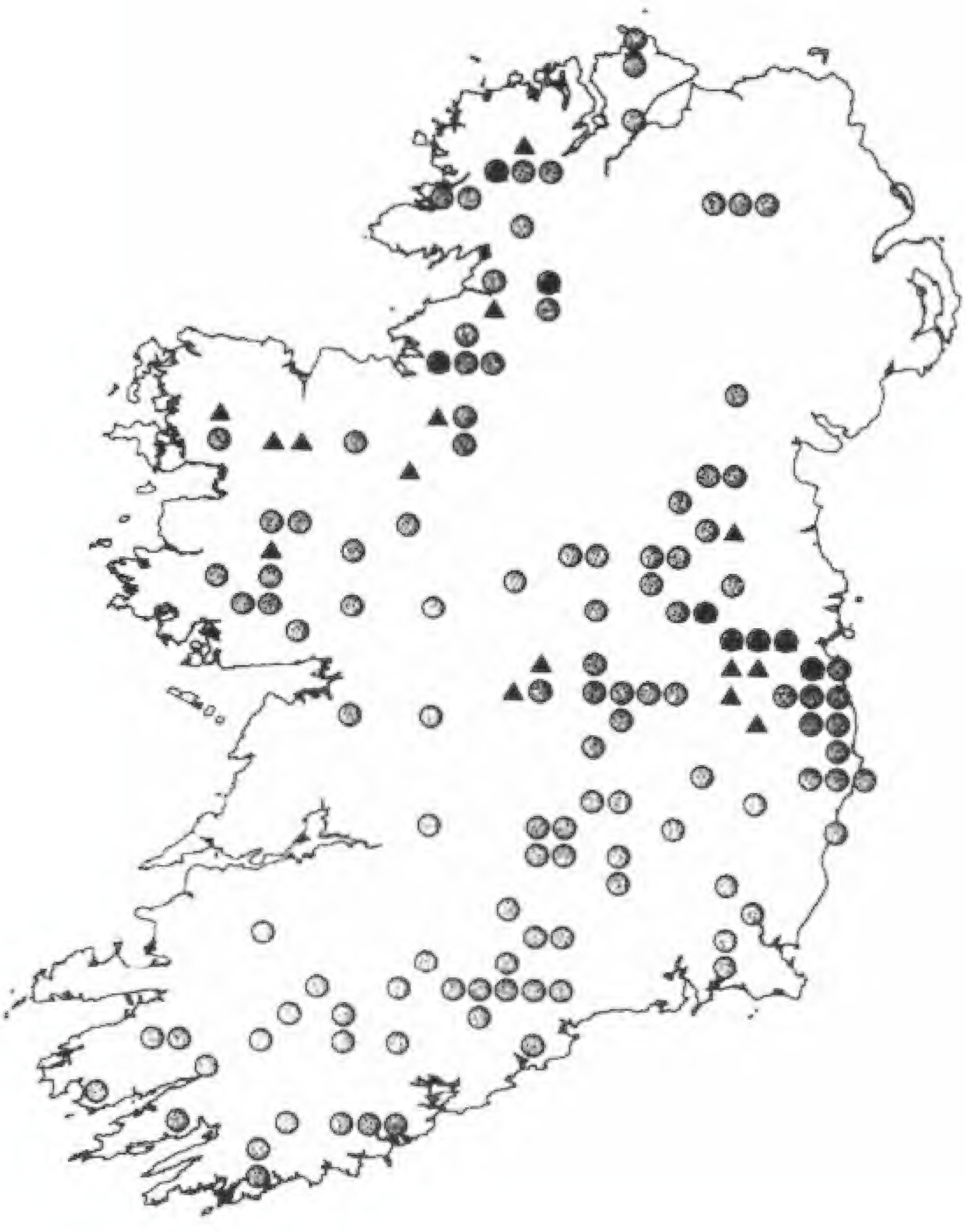
▲= pre 1970 ● = post 1970

Ecdyonurus dispar (Curtis, 1834) (Duns and Spinners - August)

Ecdyonurus dispar, formerly known as *Ecdyonurus longicauda*, is another widely distributed species throughout Europe including Ireland (Fig. 36). In general, it requires the same flow and substrate conditions as the previous species but is less restricted in its distribution, occurring also on stony, wave-washed lake shores. It can be found in association with *Ecdyonurus venosus* but tends to be more abundant in the higher conductivity waters of limestone areas. Here it may extend into the fairly slow-flowing reaches, particularly if patches of stony substrates are present (Harris, 1952).

FIGURE 36: distribution of *Ecdyonurus dispar* (Curtis).

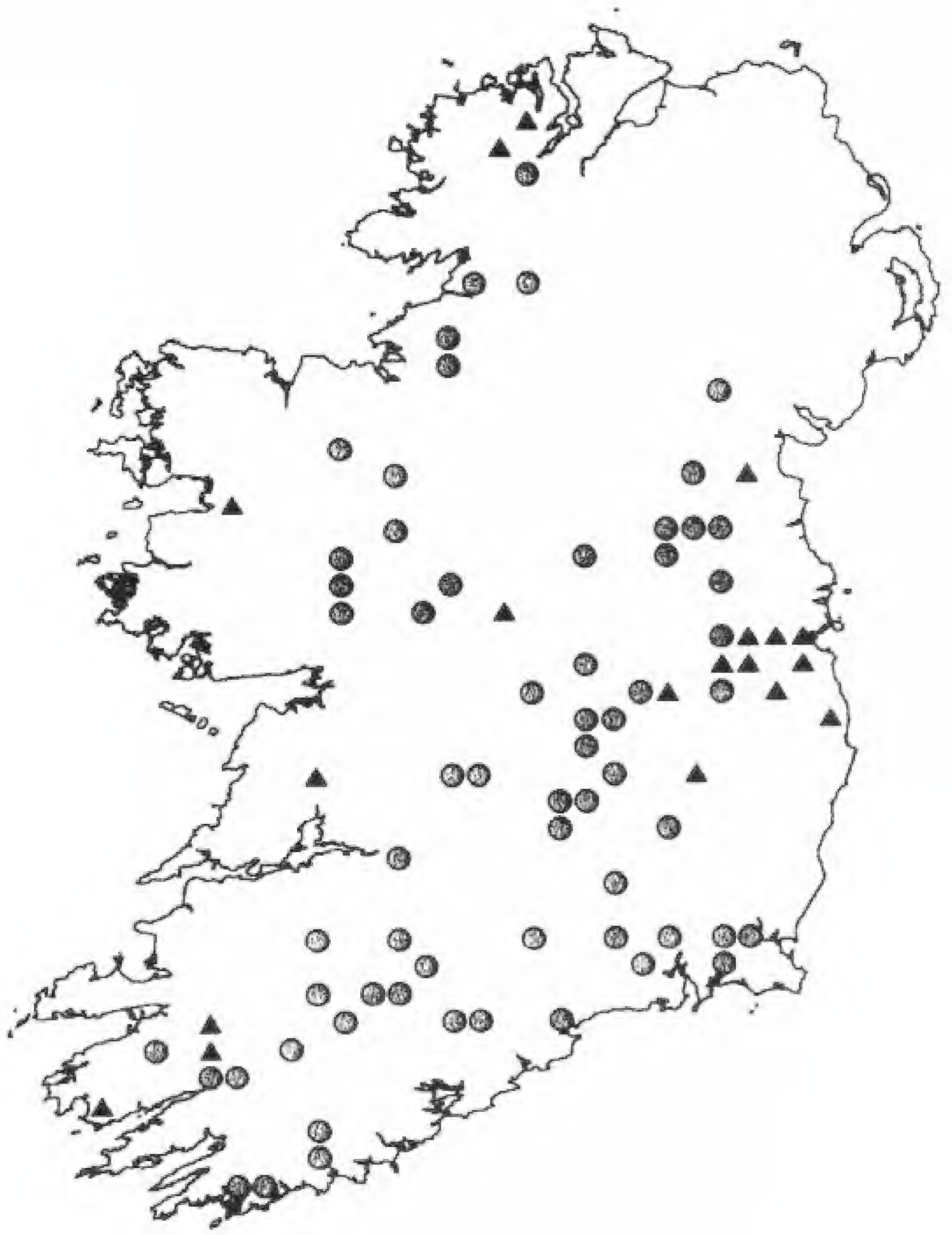
▲= pre 1970 ● = post 1970



Ecdyonurus insignis (Eaton, 1870) (Duns and Spinners - Green)

Ecdyonurus insignis, first noted by King and Halbert (1910), was also reported by Harris (1952). However, prior to this study, few recent records existed for *E. insignis*. The authors, however, found it to be common in many fast-flowing alkaline rivers, especially in the midlands (Fig. 37). It is important to realise that this species can be easily mistaken for *Ecdyonurus venosus* if the specimens are damaged and lack the seventh pair of gills.

FIGURE 37: distribution of _Ecdyonurus insignis_ (Eaton).
▲ = pre 1970 ● = post 1970



Leptophlebiidae

***Leptophlebia marginata* (Linnaeus, 1767) (Duns and Spinners - Sepia Dun and Spinner)**

This species is reasonably common in Great Britain and in other parts of Europe. It is deemed to be relatively scarce in Irish waters (Fig. 38). The majority of the records illustrated are from lakes. However, this species can also be found in slow-flowing areas of rivers. Specimens were obtained from a range of systems with varying water chemistry. Specific requirements are not evident from the limited data set on this species.

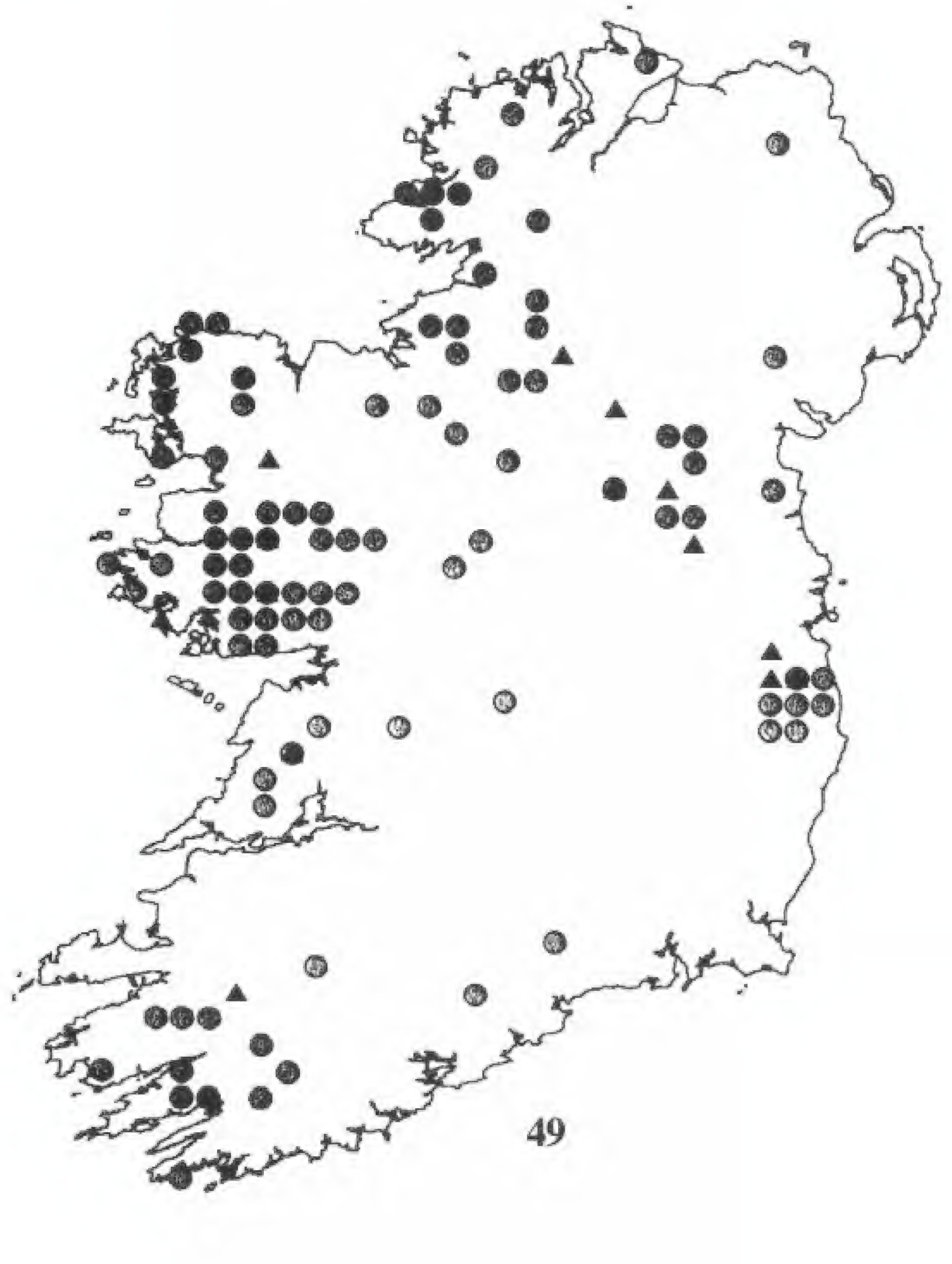
FIGURE 38: distribution of *Leptophlebia marginata* (L.).

▲= pre 1970 ● = post 1970

Leptophlebia vespertina (Linnaeus, 1758) (Duns and Spinners - Claret Dun and Claret Spinner)

King and Halbert (1910) first listed this species for Ireland and it has since been widely reported in a range of lotic and lentic habitats (Fig. 39). Connolly (1986) listed *Leptophlebia vespertina* as the third most abundant species in the Corrib region. He concluded that the species had a preference for oligotrophic waters but could cope equally well in alkaline conditions. The additional records presented in this paper support this view. It is the only ephemeropteran inhabiting high-altitude, acid lakes in Ireland. It seems to favour humic conditions in either acid or alkaline lakes. The species is often encountered in limestone lakes with peaty substrates similar to those existing in Lough Sheelin (Whelan, 1980a). The nymphs are most abundant in late spring but, following an early summer emergence, they can be completely absent from the fauna by the end of July.

FIGURE 39: distribution of *Leptophlebia vespertina* (L.).
▲= pre 1970 ● = post 1970

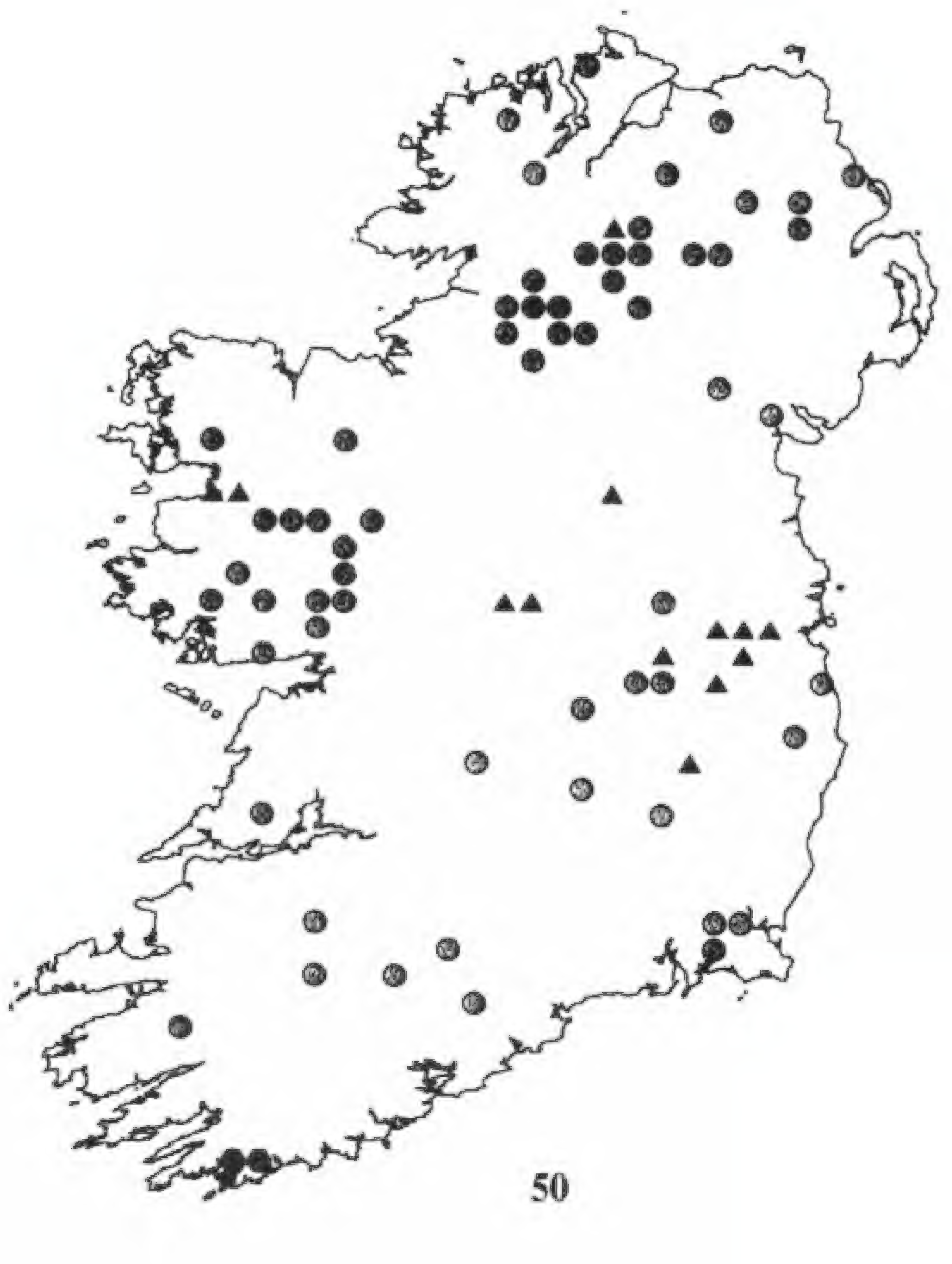


Paraleptophlebia cincta **(Retzius, 1783) (Duns and Spinners - Purple Dun and Purple Spinner)**

Paraleptophlebia cincta is found throughout central and northern Europe. In Ireland it has a patchy distribution (Fig. 40). It was first noted by King and Halbert (1910) and has been recorded only occasionally since then. Interestingly, it is reasonably widespread in Northern Ireland (Wright *et al.*, 1995).

P. cinctà is a riverine species. It can occur in acid streams (Connolly, 1986), but tends to be more commonly encountered in alkaline waters (Harris, 1952). It appears to favour slow-flow conditions and the presence of aquatic vegetation. Further collections of the species are required before its habitat requirements can be fully elucidated.

FIGURE 40: distribution of *Paralèptophlebia cincta* (Retzius).
▲= pre 1970 • = post 1970



Ephemeridae

***Ephemera danica* Müller, 1764 (Dun and Spinners - Mayfly or Green Drake Spinner - Mayfly or Spent Gnat/Black Drake Male, Grey Drake Female)**

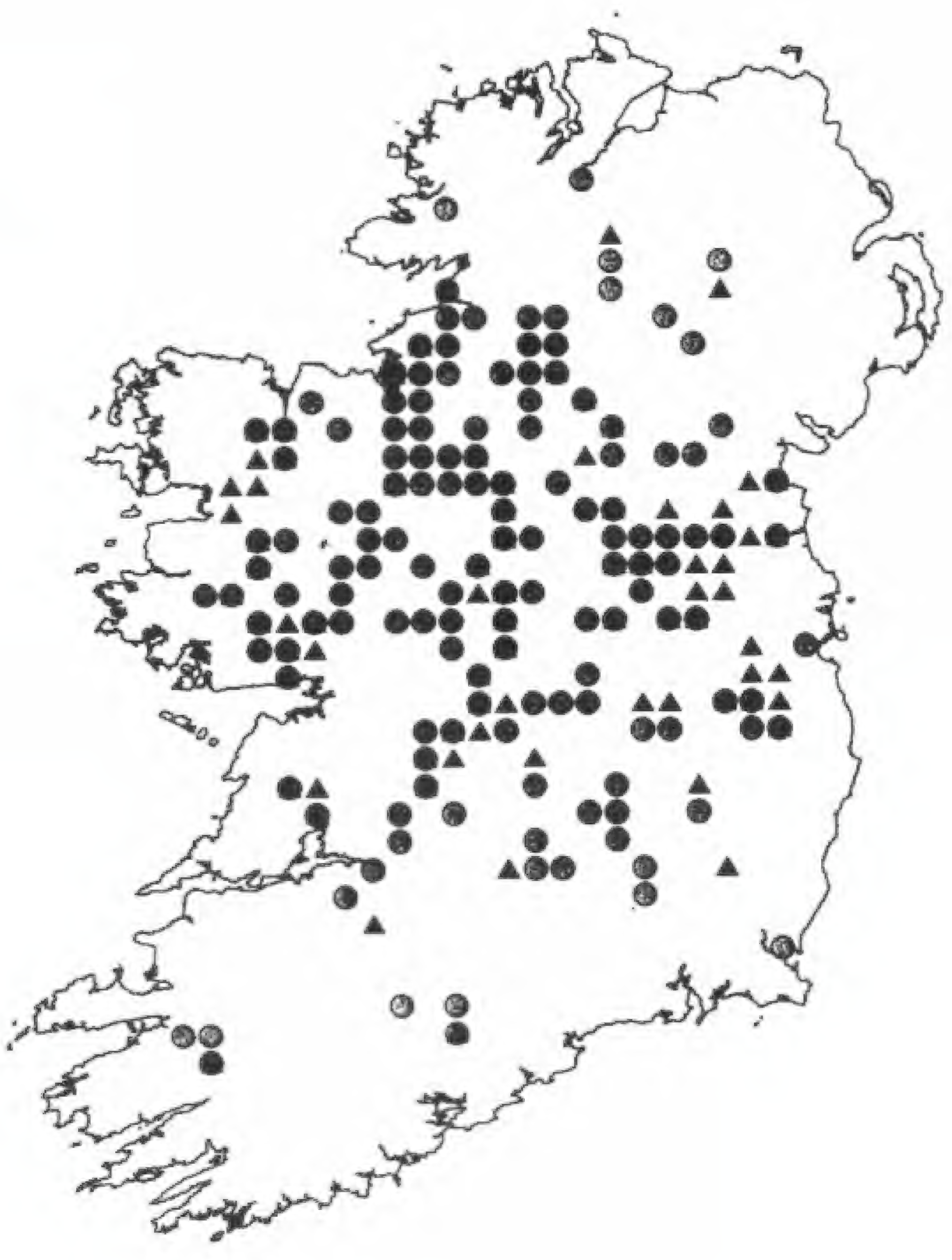
Ephemera danica is the best known of the Irish ephemeropteran species, especially to the angling fraternity. Its annual appearance, usually in large numbers, over a relatively short period, has a dramatic effect on the brown trout. The species occurs in most large Irish lakes and in many rivers. Loughs Corrib, Mask, Carra, Derravaragh and Sheelin all contain stocks of *E. danica*, but in varying degrees of abundance. Whelan (1980a, b) drew attention to the high numbers of *E. danica* in Lough Sheelin, and to the fact that these nymphs had a high biomass because of their large size. The appearance of *E. danica* causes the normally cautious trout to feed voraciously, throwing caution to the wind. The onset of the hatch of the mayfly in the west of Ireland every year heralds the appearance of large numbers of anglers and high catches of trout. The fishing technique used is referred to as 'dapping' and requires little skill by the anglers, in comparison to normal fly-fishing techniques.

E. danica occurs in rivers with moderate flow, a fact related to the burrowing preference exhibited by this species. A review of the records are shown in Fig. 41. Additional distributional records are being prepared for publication by Lucey and McGarrigle (pers. comm.).

E. danica occurs in central and northern Europe. Clifford (1982) listed it as a palaeoarctic species. According to Harris (1952), *E. danica* is of thin body build with a narrow thorax and pointed head, its mandibles and front legs are adapted for burrowing. The gills tend to be arched over in an oblique, posterior direction, lying close to the abdomen. In such a position, the gills do not hinder the movements of the nymphs within their burrows. When the gills are functioning, they create a current of water which flows over them and passes through the burrow. The nymphs live in mud or silt. The mud must be of a particular texture for the burrows to remain intact, thus ensuring that the roof and side-walls do not collapse. They show a preference for alkaline waters, perhaps because of the occurrence of marl in the substratum. In Ireland, the onset of eutrophic conditions in lakes tended to create changes in the texture of the bottom-mud, leading to great reductions in the number of mayflies present and eventually to their disappearance.

According to Whelan (1980a, b) the life cycle, which takes two years to complete, is characterised by tremendous annual variations in abundance of nymphs and emerging adults. Water temperature controls the emergence period which ranges from late April to the third week in May, when dapping begins. Weather conditions tend to regulate the emergence and control the success of egg-laying. Adverse conditions, such as gales, can totally inhibit egg-laying.

FIGURE 41: distribution of *Ephemera danica* Müller.
▲= pre 1970 ● = post 1970



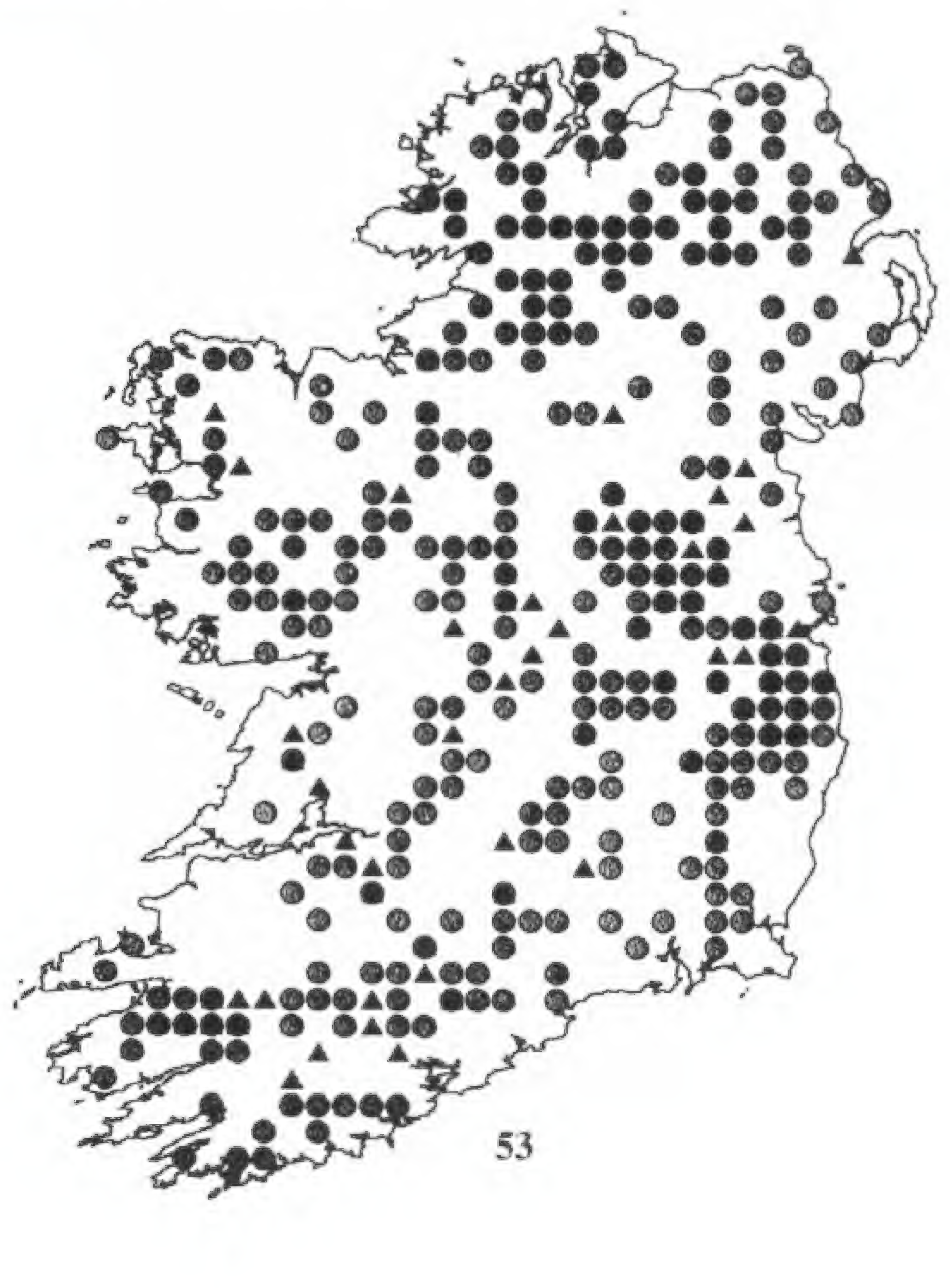
Ephemerellidae

Ephemerella ignita **(Poda, 1761) (Duns and Spinners - Blue-winged Olive, female spinner, Sherry Spinner)**

This species shares the same ubiquitous distribution (Fig. 42) as *Baetis rhodani*. It is, however, a summer-species and the nymphs first appear in late spring and usually persist until October. It probably exploits the temporary niche created by the emergence of other species. It is mainly lotic but can occur in lentic habitats. It is most abundant in alkaline waters but appears equally at home in nutrient-poor mountain streams. It avoids fast currents and seeks the protection of aquatic macrophytes and filamentous algae. It is adapted to tolerate high summer water temperatures and associated low oxygen conditions. Consequently, it is relatively tolerant of eutrophic conditions. Most Irish authors have recorded this species. Only *Baetis rhodani* and *Rhithrogena semicolorata* were more abundant in the Corrib study (Connolly, 1986).

FIGURE 42: distribution of *Ephemerella ignita* (Poda).

▲= pre 1970 • = post 1970



***Ephemerella notata* Eaton, 1887 (Duns and Spinners - Yellow Evening)**

Ephemerella notata is another rare species and consequently is poorly represented in the distribution map (Fig. 43). Sixteen records exist for the species but only three of these were recorded post-1970. While checking through a sample of several hundred *Ephemerella ignita* retained from a 1996 survey of the River Liffey, the authors discovered two specimens of *E. notata*. These are the only voucher specimens currently held for this species, apart from a sample housed in the Natural History Museum, London. Some consider the species to be on the decline due to deterioration in river water quality (Kennedy pers. comm.). In the past, he had found this species to be widespread in the Liffey and Dodder, but in recent years it has seldom been seen or recorded. It is also infrequently recorded in Great Britain but has not yet been placed in the Nationally Notable Category by Bratton.

Further efforts should be undertaken to ascertain its current status. It is most likely to occur in limestone rivers, but only in small numbers, and could easily be misidentified as *E. ignita*. Another possible explanation for its paucity is its early emergence. Hatching from May to mid-June, the nymphs are missing from subsequent summer collections. A similar observation was made by Frost (1939). Furthermore, Harris (1952) claimed that, because it appeared only in the late evening, generally at dusk, it had been overlooked in many localities.

There are several morphological differences which can be used to separate the two species. However, the uniformly pigmented tails of *E. notata* are clearly distinguishable from the alternating light and dark bands on the caudal cerci of *E. ignita*. Harris (1952) stated that the adults of *E. notata* were easily confused with those of *Heptagenia sulphurea*. They can, however, be distinguished rapidly from *E. notata* by examining the caudal cerci. *E. notata* possesses three cerci while *H. sulphurea* carries only two cerci.

FIGURE 43: distribution of *Ephemerella notata* Eaton.

▲= pre 1970 ● = post 1970

Caenidae

The nymphs are small, squat, and covered in fine hairs. The second pair of gills are enlarged and modified to form a protective cover for the other gills. The Caenidae include the smallest of the ephemeropterans. The separation of some species, such as *Caenis luctuosa* and *Caenis macrura*, is difficult and it is recommended that the original taxonomic descriptions produced by Macan (1955) should be consulted in addition to the F. B. A. key.

This genus should be afforded greater attention than heretofore because of the distinct possibility that other unrecorded species may be present in Ireland. Recently, two new Caenidae, *Caenis pseudorivulorum* Kieffermuller and *Caenis beskidensis* Sowa have been recorded in Great Britain (Gunn and Blackburn, 1997, 1998).

Caenis macrura Stephens 1835 (Duns and spinners - Angler's Curse)

This species is poorly recorded in Ireland (Fig. 44). Records, however, date back to the last century (King, 1889), when the species was known as *Caenis halterata* (Fabr.). A number of specimens were collected during this present survey. The close resemblance of *Caenis macrura* to *Caenis luctuosa* may account for its paucity in most invertebrate surveys. It is considered to be predominantly a lotic species, preferring slow currents. It has, however, been recorded in lakes such as Lough Ree.

FIGURE 44: distribution of *Caenis macrura* Stephens.

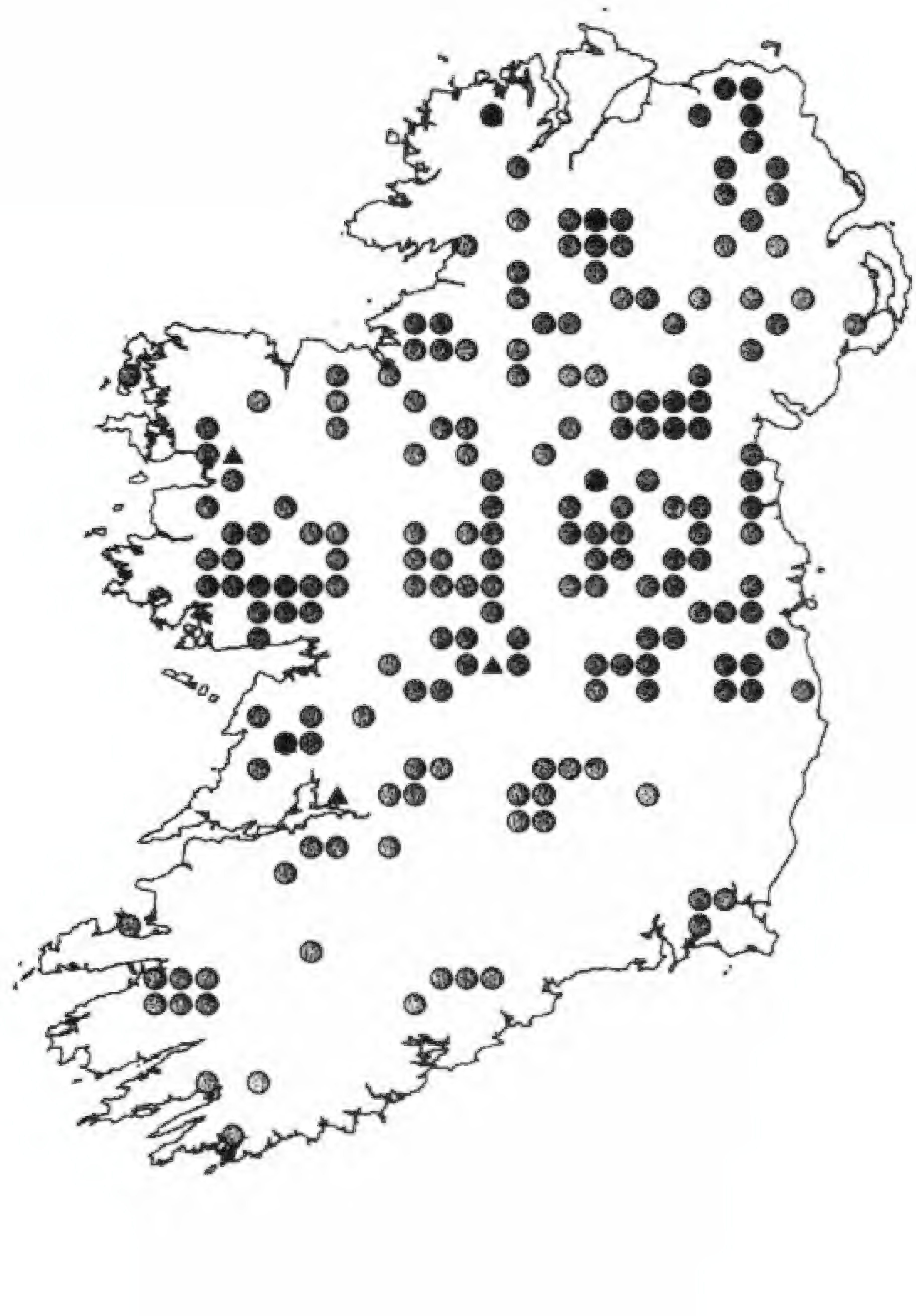
▲ = pre 1970 ● = post 1970

***Caenis luctuosa* (Burmeister, 1839) (Duns and spinners - Angler's Curse)**

This species was originally known as *Caenis moesta* Bengtsson. It is common throughout Europe, including Ireland (Fig. 45). It is typically found in slow-flowing sections of rivers or ponds/lakes with silty substrata. This is the most abundant of the lake-dwelling caenids.

FIGURE 45: distribution of *Caenis luctuosa* (Burmeister).

▲ = pre 1970 ● = post 1970



***Caenis horaria* (Linnaeus, 1758) (Duns and spinners - Angler's Curse)**

Caenis horaria is the largest of the Caenidae occurring in Ireland. In King and Halbert (1910), it appears appears under the name *Caenis dimidiata* Stephen. It is easily recognised by the presence of small tubercles on the prothrorax (Fig. 46). It also selects silty, depositing habitats and is widely distributed in Ireland (Fig. 47), especially in lakes, ponds and slow-flowing sections of large rivers.

FIGURE 46: diagnostic tubercles on the thorax of *Caenis horaria* (L.).

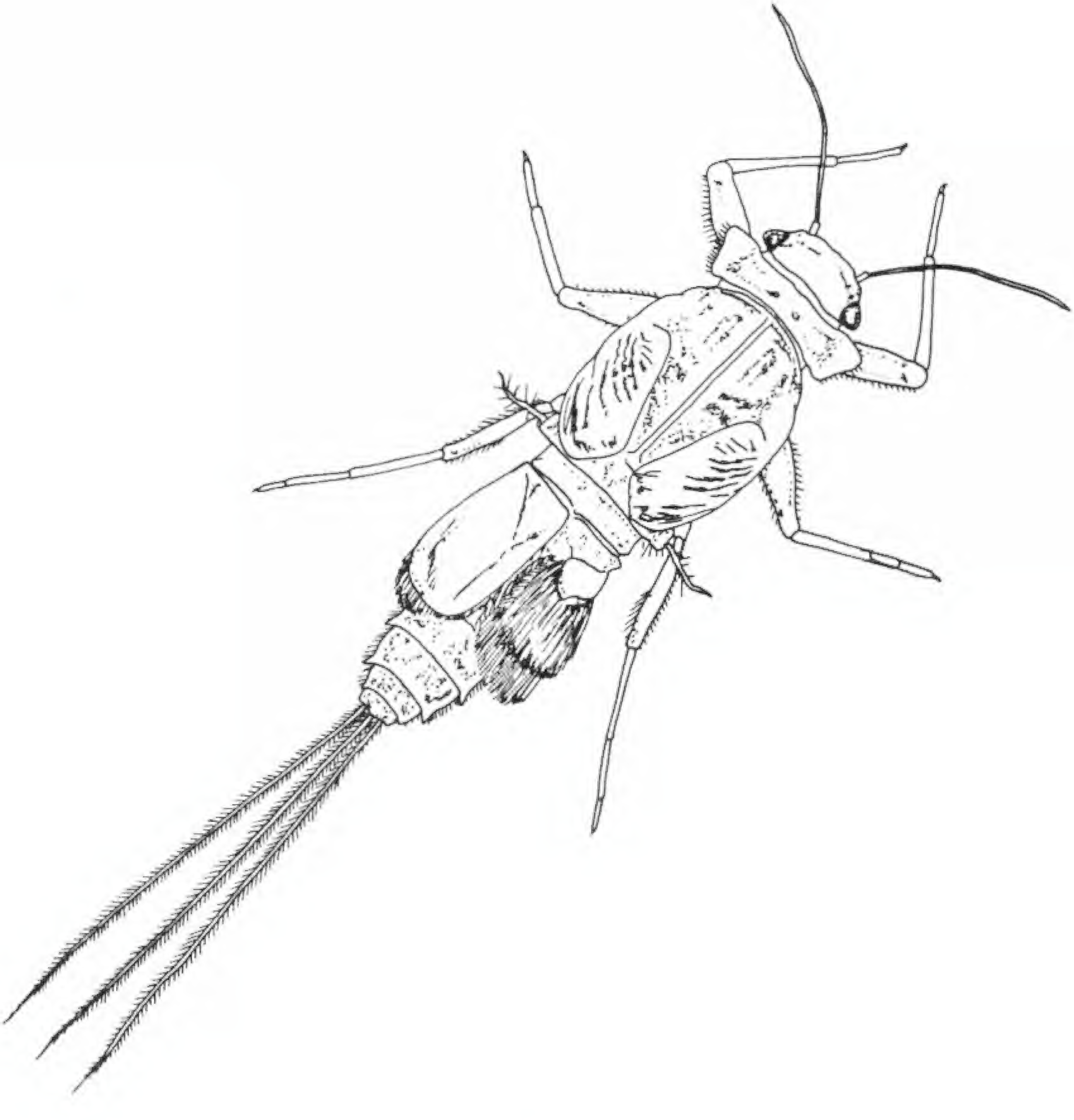
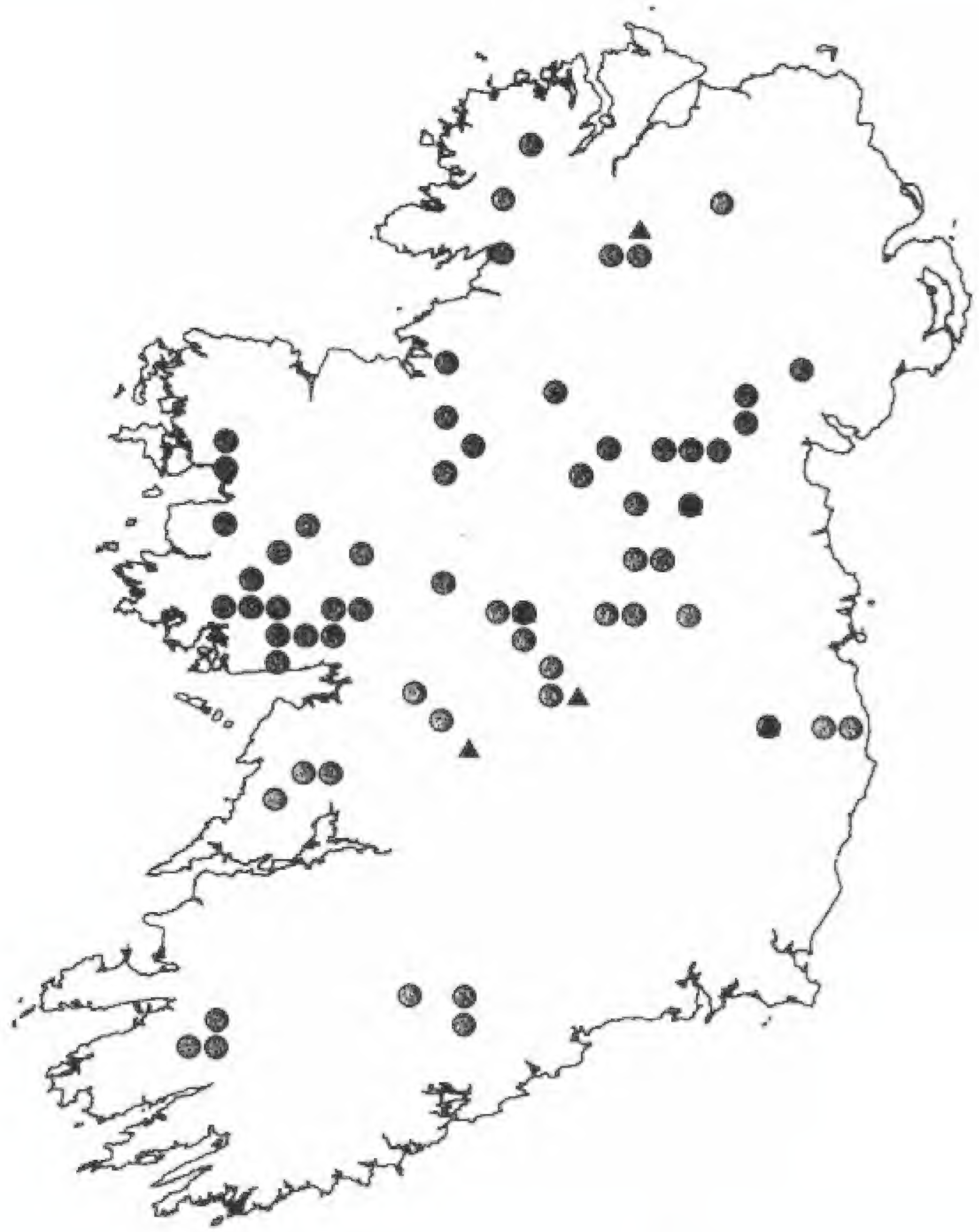


FIGURE 47: distribution of *Caenis horaria* (L.).

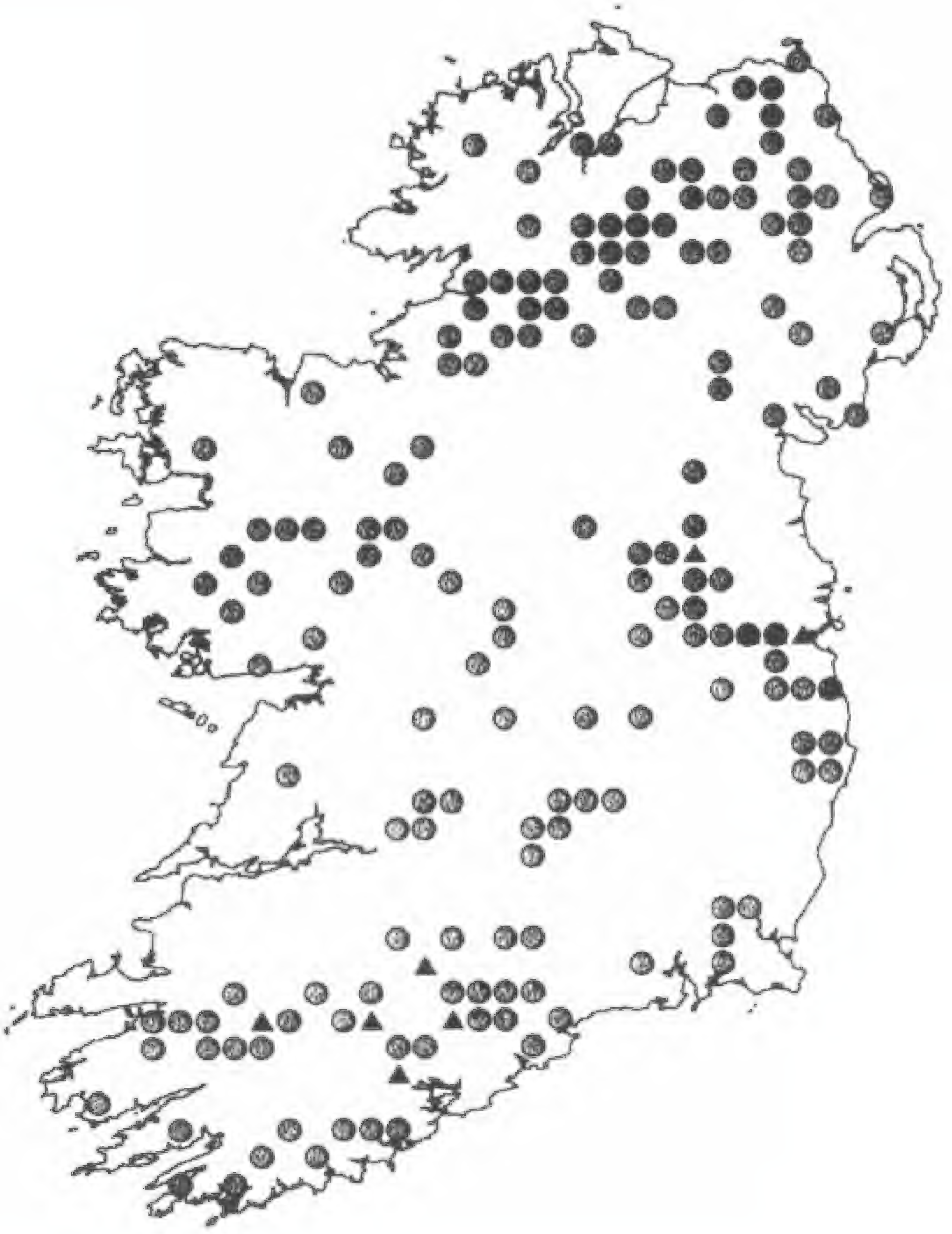
▲= pre 1970 ● = post 1970



Caenis rivulorum Eaton, 1884 (Duns and spinners - Angler's Curse)

Caenis rivulorum, as the name suggests, is a riverine species, preferring faster currents than the previous species. It is probably most abundant towards the river margins and in shallow pools. It is common and well recorded in all parts of the country (Fig. 48). Its range expands into some of the oligotrophic rivers, such as the Avonmore, Co. Wicklow, but it is most abundant in the more productive, alkaline rivers which possess clean, stony substrates. *C. rivulorum* lives among aquatic vegetation and debris, rather than silt.

FIGURE 48: distribution of _Caenis rivulorum_ Eaton.
▲ = pre 1970 ● = post 1970



Concluding comments

Prior to the commencement of this project, 36 ephemeropteran species (mayflies) had been recorded by earlier workers. The proposal now is to reduce this number to 33 species for inclusion on the Irish list. A total of 31 species have been verified by the authors from field collections taken during the 1995/98 period. Sampling covered the full range of potential habitats. Examination of the distribution maps will clearly show that 18 species are common and abundant throughout Ireland today and include *Baetis scambus*, *Baetis rhodani*, *Baetis muticus*, *Centroptilum luteolum*, *Cloeon dipterum*, *Cloeon simile*, *Rithrogena semicolorata*, *Heptagenia sulphurea*, *Heptagenia fuscogrisea*, *Ecdyonurus venosus*, *Ecdyonurus dispar*, *Ecdyonurus insignis*, *Leptophlebia vespertina*, *Ephemera danica*, *Ephemerella ignita*, *Caenis luctuosa*, *Caenis horaria* and *Caenis rivulorum*.

A further eight mayfly species have been shown to exhibit patchy distributions in Ireland, but are generally abundant in localised areas. These include *Ameletus inopinatus*, *Siphlonurus lacustris*, *Baetis vernus*, *Baetis atrebatinus*, *Eletrogena lateralis*, *Siphlonurus alternatus*, *Procloeon bifidum* and *Paraleptophlebia cinta*.

An additional seven species, *Siphlonurus armatus*, *Baetis fuscatus*, *Rhithrogena germanica*, *Ecdyonurus torrentis*, *Leptophlebia marginata*, *Ephemerella notata* and *Caenis macrura*, are rarely encountered. These species may have restricted distribution due to their specific habitat requirements. This point, however, proved difficult to confirm from the small number of records available. The status of two species, *Siphlonurus armatus* and *Baetis fuscatus*, still remains uncertain and further sampling would be required to verify whether or not they still occur in Ireland.

Many of the Irish species have broader habitat ranges than their counterparts in Great Britain. This is probably due to a combinations of factors. The low species richness in Ireland, and presumably lower competition for habitats, permits range expansion. This is also facilitated by the high availability of relatively clean-water systems in Ireland. Two species, *Ephemerella notata* and *Heptagenia fuscogrisea*, are considered scarce in Britain, but have not been included as National Notable species by Bratton (1990). *Ephemerella notata* is also rarely recorded here but, interestingly, *Heptagenia fuscogrisea* is widely distributed in Ireland.

Students of freshwater biology should realise that the Ephemeroptera are taxonomically a

difficult group. The authors are convinced that students often mis-identify small instars and that many uncertainties still exist for some species. Consequently, lists compiled by students often tend to show a limited number of species. Attention has been drawn to some of the potential errors in the species identification. Two families, the Baetidae and Heptageniidae, are particularly difficult. When dealing with either of these groups, it is essential that students should use large specimens with well-developed taxonomic characters for identification to species level. Furthermore, hand collections should be made to ensure that the full complement of essential characters are present. In the future, DNA analysis may be required to resolve some of these difficulties, particularly for the genera *Baetis* and *Ecdyonurus*.

The extent to which the distribution of Irish Ephemeroptera has changed during the course of twentieth century is difficult to evaluate, because of the varied nature of the studies which yielded such data. The paucity of certain species in recent years may be attributed to the collection methods employed, which are often restricted to riffle habitats. Nevertheless, the extensive field collections made by the authors did highlight reduced species diversity in some riverine systems (Kelly-Quinn and Bracken, in press). A large proportion of the sites sampled had fewer than five species, dominated by the relatively tolerant and ubiquitous *B. rhodani*, *E. ignita* and *Caenis* spp. The overall impoverished faunal composition, and the prolific growth of algae resulting at some of these sites, was indicative of the impact of eutrophication and support the concerns expressed by the EPA. Increasing pressure on aquatic systems from eutrophication and other pollution types is becoming critical for freshwater biota. Sites that include the rarer species are particularly important from a biodiversity perspective. A number of these important sites are listed in this paper. However, if we are to adequately address the issue of biodiversity preservation it is essential that species rich refugia be identified for each of the major catchments in the country.

Acknowledgements

The authors wish to thank Forbairt for providing the basic research grant which made this project possible. Our sincere thanks to Dr J. P. O'Connor, Keeper, Natural History Division, National Museum of Ireland, for reading and criticising the manuscript. Grateful thanks to William Clarke, Senior Technician, Zoology Department, University College Dublin, for

providing help with the production of the G.I.S. maps and illustrations included in this work and for assistance with field collections. Our sincere thanks to Martin Butler, Senior Technician, whose expertise with the fieldwork programme was invaluable.

The initial request to colleagues for the provision of specimens, records and ephemeropteran material evoked a magnificent response for which the authors are extremely grateful. We thank most sincerely Dr Stephen Brooks, Department of Entomology, Natural History Museum, London, Mr Brian Nelson, Curator-Freshwater Invertebrates, Ulster Museum, Belfast, Northern Ireland and Dr J. P. O'Connor, Keeper, National Museum of Ireland, for providing facilities and access to specimen collections housed in their respective museums.

To our friends and colleagues from all the universities throughout the island our special thanks for the provision of data and samples. These include: Dr Clare Carter, Freshwater Laboratory, Traad Point, University of Ulster; Dr Julian Reynolds, Dr. Ken Irvine and postgraduate students Ciaran Byrne, Aine O'Connor and Jonathan White, Zoology Department, Trinity College, Dublin; Professor Paul S. Giller, Dr John O'Halloran and Dr Colin Smith, Department of Zoology and Animal Ecology, University College Cork; Dr Kieran McCarthy, Zoology Department, University College Galway; Professor Edward Farrell and Julian Ahern, postgraduate student, Department of Environmental Resource Management, University College Dublin and Dr Mark Costello, Ecological Consultancy Services Limited, 17 Rathfarnham Road, Terenure, Dublin 6W. Special thanks to colleagues Dr Declan Murray, for his invaluable advice, and Dr Brenda Healy for the brackish-water lagoon collections, Zoology Department, University College Dublin. We are also indebted to a number of postdoctoral graduates, including Drs Colin Byrne, Maureen Byrne, Fran Igoe, Fiona Kelly, Jane Lynch, John O'Neill, Deirdre Tierney and Kenneth Whelan, who provided material during the survey.

We extend our grateful thanks to people in other educational and technological institutions, such as Dr Don Cotton, Institute of Technology, Sligo, Dr Peter Hale and Ms Glorie Bailee, Industrial Research and Technology Unit, Northern Ireland, for help received. Thanks are due to Dr Michael Kennedy (retired - formerly Inland Fisheries Trust, now Central Fisheries Board), Trevor Champ, M.Sc., C.F.B. and Dr Gillian McCaul, Consultant, for information and specimens provided.

Moving on to other sources, the authors sincerely thank members of the Environmental

Protection Agency, which include Dr Paul Toner, Dr James Bowman and Kevin Clabby M.Sc, Water Laboratory, Pottery Road, Dublin. We know that their colleagues will forgive us if we single out John Lucey, Regional Laboratory, Kilkenny and Martin McGarrigle, Regional Laboratory, Castlebar, Co. Mayo, Environmental Protection Agency, for special mention for their unflagging support in supplying data and specimens.

Two major works consulted widely during this survey were the doctoral theses of Dr Brendan Connolly, University College Galway, on the Ephemeroptera of the Corrib catchment, and that of Dr Kenneth Whelan, University College Dublin, on the Irish Ephemeroptera, in particular those of the Lough Sheelin catchment. All other student works consulted have been listed in the bibliography and are duly acknowledged in the Appendix.

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APPENDIX. The data base.

Unpublished records are also included from Dr Clare Carter; Dr Mark Costello; Dr Don Cotton; Professor Paul S. Giller; Colin Smith; Dr Peter Hale; Ms Glorie Bailee; Dr Michael Kennedy; Mr John Lucey; Dr Kieran McCarthy; Dr Gillian McCaul; Ms Aine O'Connor; Dr Julian Reynolds and Dr Ken Irvine.

Note: \MKQ* - indicates records confirmed by Dr Mary Kelly-Quinn.

A copy of the data base, which will be annually updated, can be obtained from Dr Mary Kelly-Quinn at:-
mary.kelly-quinn@ucd.ie.

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
B9000	1	62	L. Finn	1951	Macan & Lund (1954)
C374048	1	61	Burn Dennet	1996	IRTU, N.I.
H472724	1	63	Camowen R.	1995	Carter (unpublished records)
H565701	1	63	Camowen R.	1995	Carter (unpublished records)
H464730	1	63	R. Camowen	1990	Wright *et al.* (1995)
H512706	1	63	R. Cloghfin	1991	Wright *et al.* (1995)
C159018	1	61	R. Deele	1996	Kelly-Quinn (present study)
H2080	1	61	R. Derg	1935	Harris manuscript
H263845	1	61	R. Derg	1935	Harris manuscript
H2684	1	61	R. Derg	1994	Ulster Museum Collection
H315845	1	61	R. Derg	1990	Wright *et al.* (1995)
H191806	1	61	R. Derg	1990	Wright *et al.* (1995)
H472635	1	63	Eskragh Water	1991	Wright *et al.* (1995)
H392766	1	63	Fairywater	1990	Wright *et al.* (1995)
H431749	1	63	Fairywater	1996	IRTU, N.I.
H153946	1	62	R. Finn	1996	Kelly-Quinn (present study)
B977053	1	62	R. Finn (trib)	1996	Kelly-Quinn (present study)
H563913	1	61	R. Glenelly	1990	Wright *et al.* (1995)
C478476	1	7	Glennagannon R.	1996	Kelly-Quinn (present study)
H438873	1	61	R. Owenkillew	1990	Wright *et al.* (1995)
H613847	1	61	R. Owenkillew	1991	Wright *et al.* (1995)
H437673	1	63	Owenreagh R.	1990	Wright *et al.* (1995)
H582822	1	63	Owenreagh R.	1990	Wright *et al.* (1995)

NGR	B9000	C374048	H472724	H565701	H464730	H512706	C159018	H2080	H263845	H2684	H315845	H191806	H472635	H392766	H431749	H153946	B977053	H563913	C478476	H438873	H613847	H437673	H582822
Caenis macrura							×																
Caenis luctuosa					×	×	×				×	×	×	×						×		×	×
Caenis rivulorum			×		×	×					×	×	×	×				×		×	×	×	×
Caenis horaria			×											×									
Ephemerella ignita			×	×	×	×	×	×		×	×	×	×	×		×		×	×	×	×	×	×
Ephemerella notata																							
Ephemera danica		×											×		×								
Paraleptophlebia cincta					×	×								×								×	×
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea								×	×		×	×		×							×	×	
Electrogena lateralis																		×					
Rhithrogena semicolorata			×	×	×	×		×			×	×	×	×				×	×	×	×	×	×
Rhithrogena germanica																							
Ecdyonurus venosus			×	×				×															
Ecdyonurus torrentis																							
Ecdyonurus dispar	×						×										×		×				
Ecdyonurus insignis																							
Baetis vernus																		×					
Baetis fuscatus																							
Baetis scambus				×	×	×						×		×		×		×	×	×	×	×	×
Baetis rhodani			×	×	×	×					×	×	×	×		×		×	×	×	×	×	×
Baetis muticus			×	×	×	×							×	×		×			×			×	×
Baetis atrebatinus																							
Centroptilum luteolum	×				×															×			
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum						×																	
Siphlonurus armatus																							
Siphlonurus lacustris							×			×													
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
H449678	1	63	Quiggery R.	1990	Wright *et al.* (1995)
H4080	1	63	Strule R.	1935	Harris manuscript
H440753	1	63	Strule R.	1995	Carter (unpublished records)
H411861	1	63	Strule R.	1990	Wright *et al.* (1995)
H435747	1	63	Strule R.	1995	Carter (unpublished records)
H436795	1	63	Strule R.	1995	Carter (unpublished records)
H437777	1	63	Strule R.	1995	Carter (unpublished records)
H449729	1	63	Strule R.	1996	IRTU, N.I.
C579442	2	-	L. Nastokan	1996	Kelly-Quinn (present study)
C474134	2	40	R. Faughan	1990	Wright *et al.* (1995)
C683098	2	41	R. Owenbeg	1990	Wright *et al.* (1995)
C669067	2	41	R. Owenrigh	1990/91	Wright *et al.* (1995)
C751063	2	41	R. Roe	1990	Wright *et al.* (1995)
H9160	3	-	L. Derryadd	1951	Macan & Lund (1954)
H938643	3	-	L. Neagh	pre 1910	King (1889), King & Halbert (1910)
C879228	3	64	R. Aghadowey	1990	Wright *et al.* (1995)
H740986	3	66	Altalacky R.	1995	Carter (unpublished records)
J374198	3	82	R. Annalong	1991	Wright *et al.* (1995)
H841151	3	-	Anon R.	1996	Kelly-Quinn (present study)
H734793	3	67	R. Ballinderry	1991	Wright *et al.* (1995)
H835764	3	67	R. Ballinderry	1990	Wright *et al.* (1995)
H927798	3	67	R. Ballinderry	1990	Wright *et al.* (1995)
H630538	3	68	Ballygawley R.	1991	Wright *et al.* (1995)

Caenis macrura																							
Caenis luctuosa	×			×												×						×	×
Caenis rivulorum	×		×	×	×	×	×			×	×	×	×			×		×		×	×		×
Caenis horaria			×			×	×																
Ephemerella ignita	×		×	×	×	×	×			×	×	×	×			×	×	×	×	×	×	×	×
Ephemerella notata																							
Ephemera danica		×						×													×		
Paraleptophlebia cincta		×									×					×				×	×		
Leptophlebia marginata																							
Leptophlebia vespertina									×														
Heptagenia fuscogrisea																							
Heptagenia sulphurea															×								
Electrogena lateralis												×					×						
Rhithrogena semicolorata	×		×	×	×	×	×			×	×	×	×				×	×	×	×		×	×
Rhithrogena germanica																							
Ecdyonurus venosus			×			×	×										×		×				
Ecdyonurus torrentis																	×						
Ecdyonurus dispar																	×						
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus	×									×	×	×	×			×	×	×				×	×
Baetis rhodani	×		×	×		×	×			×	×	×	×			×	×	×	×	×	×	×	×
Baetis muticus			×	×		×	×				×	×	×				×	×		×			
Baetis atrebatinus																							
Centroptilum luteolum																		×		×			
Cloeon simile														×									
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																		×					
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	H449678	H4080	H440753	H411861	H435747	H436795	H437777	H449729	C579442	C474134	C683098	C669067	C751063	H9160	H938643	C879228	H740986	J374198	H841151	H734793	H835764	H927798	H630538

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
H8683	3	67	Ballymully R.	1933	Natural History Museum London (Hanna)
H891608	3	68	R. Blackwater	pre 1910	King (1889), King & Halbert (1910)
H625530	3	68	R. Blackwater	1991	Wright *et al.* (1995)
H759446	3	68	R. Blackwater	1991	Wright *et al.* (1995)
H852559	3	68	R. Blackwater	1990	Wright *et al.* (1995)
H8040	3	68	R. Callan	pre 1910	King (1889), King & Halbert (1910)
H857392	3	68	R. Callan	1990	Wright *et al.* (1995)
C963038	3	64	R. Clady	1990	Wright *et al.* (1995)
J194846	3	64	R. Clady	1991	Wright *et al.* (1995)
D0010	3	65	Clogh R.	1988	Carter & Wood (1995)
D062131	3	65	Clogh R.	1990/91	Wright *et al.* (1995)
J192767	3	64	Crumlin R.	1990/92	Wright *et al.* (1995)
J253755	3	64	Crumlin R.	1973	Ulster Museum Collection
J039508	3	64	R. Cusher	1990	Wright *et al.* (1995)
J260935	3	64	Doagh R.	1991	Wright *et al.* (1995)
H774966	3	66	Douglas R.	1995	Carter (unpublished records)
H5433	3	68	Finn R.	1998	Kelly-Quinn (present study)
H552517	3	68	Fury R.	1991	Wright *et al.* (1995)
J160983	3	65	Kellswater	1990	Wright *et al.* (1995)
H806816	3	67	Lissan Water	1991/93	Wright *et al.* (1995)
D057130	3	65	R. Main	1990	Wright *et al.* (1995)
J087896	3	65	R. Main	1990	Wright *et al.* (1995)
H695890	3	66	Moyola R.	1995	Carter (unpublished records)

NGR	H8683	H891608	H625530	H759446	H852559	H8040	H857392	C963038	J194846	D0010	D062131	J192767	J253755	J039508	J260935	H774966	H5433	H552517	J160983	H806816	D057130	J087896	H695890
Caenis macrura																							
Caenis luctuosa			×	×	×			×			×	×		×				×	×		×	×	
Caenis rivulorum			×				×	×	×		×	×		×	×			×	×		×	×	
Caenis horaria																×							
Ephemerella ignita			×	×			×	×	×		×	×		×	×	×		×	×	×	×	×	×
Ephemerella notata	×																						
Ephemera danica		×	×	×																			
Paraleptophlebia cincta									×									×	×				
Leptophlebia marginata																							
Leptophlebia vespertina																					×		
Heptagenia fuscogrisea																							
Heptagenia sulphurea			×	×														×					
Electrogena lateralis																							
Rhithrogena semicolorata	×		×				×		×	×	×	×	×		×	×		×	×	×		×	×
Rhithrogena germanica																	×						
Ecdyonurus venosus																×							
Ecdyonurus torrentis																							
Ecdyonurus dispar																×							
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus			×	×				×	×		×	×			×	×		×	×				×
Baetis rhodani			×	×	×	×	×	×	×	×	×	×		×	×	×	×	×	×	×	×	×	×
Baetis muticus							×	×	×		×				×	×		×	×	×			
Baetis atrebatinus																							
Centroptilum luteolum											×				×				×		×		
Cloeon simile																							
Cloeon dipterum																							×
Procloeon bifidum				×											×								
Siphlonurus armatus																							
Siphlonurus lacustris																							×
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
H729906	3	66	Moyola R.	1995	Carter (unpublished records)
H837977	3	66	Moyola R.	1995	Carter (unpublished records)
H933934	3	66	Moyola R.	1995	Carter (unpublished records)
H786956	3	66	Moyola R.	1995	Carter (unpublished records)
H956905	3	66	Moyola R.	1990	Wright *et al.* (1995)
J285903	3	64	Six Mile Water	1990	Wright *et al.* (1995)
J138450	3	64	Upper Bann	1990/92	Wright *et al.* (1995)
J218291	3	64	Upper Bann	1990	Wright *et al.* (1995)
D105030	4	16	R. Braid	1990	Wright *et al.* (1995)
C940358	4	16	R. Bush	1973	Ulster Museum Collection
C942360	4	16	R. Bush	1990	Wright *et al.* (1995)
C943357	4	16	R. Bush	1973	Ulster Museum Collection
C961305	4	16	R. Bush	1973	Ulster Museum Collection
C995305	4	16	R. Bush	1973	Ulster Museum Collection
C996303	4	16	R. Bush	1973	Ulster Museum Collection
D014295	4	16	R. Bush	1973	Ulster Museum Collection
D077291	4	16	R. Bush	1991	Wright *et al.* (1995)
D089281	4	16	R. Bush	1973	Ulster Museum Collection
D021334	4	16	R. Dervock	1990	Wright *et al.* (1995)
D027303	4	16	Flesk Water	1973	Ulster Museum Collection
D028302	4	16	Flesk Water	1973	Ulster Museum Collection
D028303	4	16	Flesk Water	1973	Ulster Museum Collection
D224214	4	44	Glenariff R.	1990	Wright *et al.* (1995)

NGR	H729906	H837977	H933934	H786956	H956905	J285903	J138450	J218291	D105030	C940358	C942360	C943357	C961305	C995305	C996303	D014295	D077291	D089281	D021334	D027303	D028302	D028303	D224214
Caenis macrura																							
Caenis luctuosa					×		×		×	×	×			×		×		×				×	
Caenis rivulorum	×	×	×	×	×	×	×	×	×		×				×		×		×		×		×
Caenis horaria																							
Ephemerella ignita	×	×	×	×	×	×	×	×	×		×						×		×				×
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta					×																		
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis	×																×						
Rhithrogena semicolorata	×	×	×	×		×		×	×		×	×	×				×		×	×			×
Rhithrogena germanica																							
Ecdyonurus venosus	×	×	×	×																			
Ecdyonurus torrentis	×			×																			
Ecdyonurus dispar	×	×	×	×																			
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus	×	×	×	×			×	×	×		×						×						×
Baetis rhodani	×	×	×	×	×	×	×	×	×		×		×				×	×	×				×
Baetis muticus		×	×	×							×		×				×						×
Baetis atrebatinus																							
Centroptilum luteolum					×				×		×		×				×						
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum					×																		
Siphlonurus armatus																							
Siphlonurus lacustris					×																		
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
D3014	4	69	Glenarm R.	1973	Ulster Museum Collection
D310149	4	69	Glenarm R.	1990	Wright *et al.* (1995)
D126406	4	17	Glenhesk R.	1990	Wright *et al.* (1995)
D140356	4	17	Glenhesk R.	1973	Ulster Museum Collection
D289090	4	69	Owencloghy Water	1973	Ulster Museum Collection
D313060	4	16	Skeagh Water	1973	Ulster Museum Collection
J333796	5	-	n/a	pre 1910	King (1889), King & Halbert (1910)
J448484	5	77	R. Annacloy	1990	Wright *et al.* (1995)
J408999	5	71	Glynn R.	1991	Wright *et al.* (1995)
J252516	5	74	R. Lagan	1990	Wright *et al.* (1995)
J3070	5	74	R. Lagan	1885	Natural History Museum London (Barrett)
D378008	5	70	R. Larne	1991	Wright *et al.* (1995)
H860011	6	-	Anon L.	1997	Kelly-Quinn (present study)
H8305	6	95	Creevey L.	1996	Kelly-Quinn (present study)
N760942	6	96	L. Ervey	1996	Kelly-Quinn (present study)
H855085	6	95	L. Moylan	1997	Kelly-Quinn (present study)
H8010	6	94	L. Muckno	1996	Kelly-Quinn (present study)
H832196	6	94	L. Muckno	1980's	O'Reilly (1982)
H846188	6	94	L. Muckno	1980's	O'Reilly (1982)
H862166	6	94	L. Muckno	1980's	O'Reilly (1982)
H867171	6	94	L. Muckno	1980's	O'Reilly (1982)
H835224	6	94	Muckno Mill L.	1996	Kelly-Quinn (present study)
H882190	6	-	L. Patrick	1996	Kelly-Quinn (present study)

NGR	D3014	D310149	D126406	D140356	D289090	D313060	J333796	J448484	J408999	J252516	J3070	D378008	H860011	H8305	N760942	H855085	H8010	H832196	H846188	H862166	H867171	H835224	H882190
Caenis macrura																							
Caenis luctuosa								×		×				×			×				×	×	×
Caenis rivulorum		×	×					×	×														
Caenis horaria																	×					×	
Ephemerella ignita		×	×					×	×	×	×	×											
Ephemerella notata																							
Ephemera danica																	×						
Paraleptophlebia cincta												×											
Leptophlebia marginata																		×	×	×			
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis		×							×														
Rhithrogena semicolorata	×	×	×		×	×			×			×											
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis																							
Baetis vernus							×					×											
Baetis fuscatus																							
Baetis scambus		×	×	×				×	×			×											
Baetis rhodani		×	×					×	×	×		×		×			×						
Baetis muticus		×	×						×														
Baetis atrebatinus																							
Centroptilum luteolum										×							×						
Cloeon simile																							
Cloeon dipterum													×	×	×								×
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus															×								
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
H855832	6	-	Anon	1933	Kimmins (1934)
J238149	6	85	Cassy Water	1990/91	Wright *et al.* (1995)
N820869	6	96	R. Dee	1947	Harris manuscript
N910892	6	96	R. Dee	1935	Harris manuscript
N924895	6	96	R. Dee	1935	Harris manuscript
N935900	6	96	R. Dee	1935	Harris manuscript
N960902	6	96	R. Dee	1947	Harris manuscript
N962904	6	96	R. Dee	1935/47	Harris manuscript
N9691	6	96	R. Dee	1973-77	Whelan (1980a)
O0391	6	96	R. Dee	1995	Mc Donnell (1996)/MKQ*
O0590	6	96	R. Dee	1995	Mc Donnell (1996)/MKQ*
O0791	6	96	R. Dee	1995	Mc Donnell (1996)/MKQ*
H834214	6	94	R. Fane	1996	Kelly-Quinn (present study)
H835252	6	94	R. Fane	1996	Kelly-Quinn (present study)
H847227	6	94	R. Fane	1993	Kelly-Quinn (present study)
H854269	6	94	R. Fane	1996	Kelly-Quinn (present study)
H885130	6	94	R. Fane	1938	Harris manuscript
H9000	6	94	R. Fane	1965	Harris manuscript
H912097	6	94	R. Fane	1996	Kelly-Quinn (present study)
H935065	6	94	R. Fane	1993	Kelly-Quinn (present study)
H989065	6	94	R. Fane	1993	Kelly-Quinn (present study)
J0000	6	94	R. Fane	1893	Natural History Museum London (Waldron)
J006020	6	94	R. Fane	1993	Kelly-Quinn (present study)

NGR	H855832	J238149	N820869	N910892	N924895	N935900	N960902	N962904	N9691	O0391	O0590	O0791	H834214	H835252	H847227	H854269	H885130	H9000	H912097	H935065	H989065	J0000	J006020
Caenis macrura																						×	
Caenis luctuosa										×	×	×	×										
Caenis rivulorum														×	×	×							
Caenis horaria													×										
Ephemerella ignita			×				×						×	×	×	×							
Ephemerella notata	×																						
Ephemera danica			×				×		×														
Paraleptophlebia cincta														×		×							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea								×					×						×	×	×		×
Electrogena lateralis		×																					
Rhithrogena semicolorata	×	×	×				×							×	×	×				×	×		×
Rhithrogena germanica																							
Ecdyonurus venosus	×													×		×	×						
Ecdyonurus torrentis																							
Ecdyonurus dispar															×	×							
Ecdyonurus insignis								×							×								
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus		×																					
Baetis rhodani		×			×			×					×	×	×	×				×			×
Baetis muticus			×				×							×	×	×							
Baetis atrebatinus						×		×										×					
Centroptilum luteolum							×						×										
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum				×				×															
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
J032005	6	94	R. Fane	1993	Kelly-Quinn (present study)
J065017	6	94	R. Fane	1965	Harris manuscript
J015157	6	92	Forkhill R.	1991	Wright *et al.* (1995)
N895903	6	96	Garra R.	1996	Kelly-Quinn (present study)
O0595	6	95	R. Glyde	1973-77	Whelan (1980a)
O059953	6	96	R. Glyde	pre 1910	King (1889), King & Halbert (1910)
N759904	6	96	Kilmainham R.	1996	Kelly-Quinn (present study)
J075303	6	89	Newry R.	1990	Wright *et al.* (1995)
J353323	6	81	R. Shimna	1991	Wright *et al.* (1995)
O059867	6	96	White Rv.	1996	Kelly-Quinn (present study)
O0686	6	96	White R.	1995	Mc Donnell (1996)/MKQ*
O0688	6	96	White R.	1995	Mc Donnell (1996)/MKQ*
N632782	7	-	Anon L.	1996	Kelly-Quinn (present study)
N5060	7	159	L Lene	1953	Harris manuscript
N5268	7	159	L. Lene	1991	Mathews *et al.* (1993)
N5268	7	159	L. Lene	1997	Kelly-Quinn (present study)
N526686	7	159	L. Lene	1996	Kelly-Quinn (present study)
N6886	7	159	L. Mullagh	1968	Clabby (1969)
N6080	7	159	L. Ramor	Pre-1950	Harris manuscript
N6080	7	159	L. Ramor	1996	Kelly-Quinn (present study)
N5070	7	159	White Lake	1973-77	Whelan (1980a & b)
N686690	7	159	Athboy R.	1996	Kelly-Quinn (present study)
N6080	7	159	Ballaghanea R.	1993	Farrelly (1994)/MKQ*

Caenis macrura																							
Caenis luctuosa								×			×	×			×	×	×			×			
Caenis rivulorum	×		×				×															×	
Caenis horaria								×							×		×	×		×			
Ephemerella ignita	×		×	×			×	×	×	×						×	×					×	
Ephemerella notata																							
Ephemera danica					×	×								×					×		×		
Paraleptophlebia cincta			×																				
Leptophlebia marginata																							
Leptophlebia vespertina							×	×		×								×					
Heptagenia fuscogrisea																			×				×
Heptagenia sulphurea	×					×		×															
Electrogena lateralis									×														
Rhithrogena semicolorata			×				×		×														×
Rhithrogena germanica																							
Ecdyonurus venosus																							×
Ecdyonurus torrentis																							
Ecdyonurus dispar				×			×																×
Ecdyonurus insignis							×																
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus			×					×	×														
Baetis rhodani	×		×	×			×	×	×		×	×										×	×
Baetis muticus			×																			×	
Baetis atrebatinus		×																					
Centroptilum luteolum			×					×						×			×			×			
Cloeon simile															×								
Cloeon dipterum				×									×										
Procloeon bifidum								×															
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus															×								
Ameletus inopinatus																							
NGR	J032005	J065017	J015157	N895903	O0595	O059953	N759904	J075303	J353323	O059867	O0686	O0688	N632782	N5060	N5268	N5268	N526686	N6886	N6080	N6080	N5070	N686690	N6080

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N600890	7	159	R. Blackwater	1988	Byrne (1988)
N600890	7	159	R. Blackwater	1993	Farrelly (1994)/MKQ*
N605875	7	159	R. Blackwater	1988	Byrne (1988)
N6070	7	159	R. Blackwater	pre-1950	Harris manuscript
N6080	7	159	R. Blackwater	pre-1950	Harris manuscript
N629834	7	159	R. Blackwater	1988	Byrne (1988)
N635809	7	159	R. Blackwater	1988	Byrne (1988)
N652803	7	159	R. Blackwater	1938	Harris manuscript
N685777	7	159	R. Blackwater	1975/76	O'Flaherty (1976)
N7070	7	159	R. Blackwater	pre-1950	Harris manuscript
N816342	7	159	R. Blackwater	1947	Harris manuscript
N819723	7	159	R. Blackwater	1975/76	O'Flaherty (1976)
N820723	7	159	R. Blackwater	1966	Harris manuscript
N821725	7	159	R. Blackwater	1996	Kelly-Quinn (present study)
N8568	7	159	R. Blackwater	1975/76	O'Flaherty (1976)
N8768	7	159	R. Blackwater	1975/76	O'Flaherty (1976)
N715773	7	159	R. Blackwater (Kells)	1996	Kelly-Quinn (present study)
N716772	7	159	R. Blackwater (Kells)	1976	O'Flaherty (1976)
N735722	7	159	R. Blackwater (Kells)	1996	Kelly-Quinn (present study)
N7475	7	159	R. Blackwater (Kells)	pre-1950	Carter (unpublished records)
N7475	7	159	R. Blackwater (Kells)	1976	Natural History Musuem Dublin
N7475	7	159	R. Blackwater (Kells)	1973-77	Whelan (1980a)
N7476	7	159	R. Blackwater (Kells)	1939-1966	Harris manuscript

Caenis macrura																							
Caenis luctuosa						×	×					×			×	×	×						
Caenis rivulorum																	×						
Caenis horaria																							
Ephemerella ignita									×							×	×	×	×				×
Ephemerella notata																							
Ephemera danica									×			×						×		×	×	×	
Paraleptophlebia cincta											×												
Leptophlebia marginata																							
Leptophlebia vespertina									×									×					
Heptagenia fuscogrisea																							×
Heptagenia sulphurea		×										×				×	×						
Electrogena lateralis																							
Rhithrogena semicolorata		×															×						
Rhithrogena germanica																							
Ecdyonurus venosus	×	×															×						×
Ecdyonurus torrentis																	×						
Ecdyonurus dispar											×		×				×						
Ecdyonurus insignis									×					×			×	×		×	×		
Baetis vernus																			×				
Baetis fuscatus																							
Baetis scambus																	×						×
Baetis rhodani	×	×	×	×	×					×		×				×	×		×				
Baetis muticus	×		×			×		×								×	×						×
Baetis atrebatinus																							×
Centroptilum luteolum							×										×						
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	N600890	N600890	N605875	N6070	N6080	N629834	N635809	N652803	N685777	N7070	N816342	N819723	N820723	N821725	N8568	N8768	N715773	N716772	N735722	N7475	N7475	N7475	N7476

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N762754	7	159	R. Blackwater (Kells)	1975/76	O'Flaherty (1976)
N763760	7	159	R. Blackwater (Kells)	1988	Byrne (1988)
N719452	7	159	R. Blackwater (Longwood)	1937/38	Harris manuscript
N739422	7	159	R. Blackwater (Longwood)	1936/39/47	Harris manuscript
N765399	7	159	R. Blackwater (Longwood)	1947	Harris manuscript
N771411	7	159	R. Blackwater (Longwood)	1935/38	Harris manuscript
N7741	7	159	R. Blackwater (Longwood)	1947	Harris manuscript
N802378	7	159	R. Blackwater (Longwood)	1947	Harris manuscript
N715772	7	159	R. Blackwater trib. at Clarin's Bdg	1996	Kelly-Quinn (present study)
N500389	7	159	R. Boyne	1989/91	Lynch (1994)
N5030	7	159	R. Boyne	1948	Harris manuscript
N562442	7	159	R. Boyne	1989/91	Lynch (1994)
N590380	7	159	R. Boyne	1989/91	Lynch (1994)
N6040	7	159	R. Boyne	pre-1950	Harris manuscript
N615375	7	159	R. Boyne	1947	Harris manuscript
N638402	7	159	R. Boyne	1989/91	Lynch (1994)
N665435	7	159	R. Boyne	1989/91	Lynch (1994)
N7050	7	159	R. Boyne	pre-1950	Harris manuscript
N712498	7	159	R. Boyne	1989/91	Lynch (1994)
N733521	7	159	R. Boyne	1989/91	Lynch (1994)
N735531	7	159	R. Boyne	1944	Harris manuscript
N800570	7	159	R. Boyne	1935/44	Harris manuscript
N8050	7	159	R. Boyne	pre-1950	Harris manuscript

NGR	N762754	N763760	N719452	N739422	N765399	N771411	N7741	N802378	N715772	N500389	N5030	N562442	N590380	N6040	N615375	N638402	N665435	N7050	N712498	N733521	N735531	N800570	N8050
Caenis macrura																							
Caenis luctuosa	×	×															×		×	×			
Caenis rivulorum																	×		×	×			
Caenis horaria																							
Ephemerella ignita			×			×							×			×	×		×	×		×	
Ephemerella notata																						×	
Ephemera danica						×								×			×	×	×				×
Paraleptophlebia cincta								×								×							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea						×					×						×						
Heptagenia sulphurea				×										×			×	×					×
Electrogena lateralis																							
Rhithrogena semicolorata														×			×						
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar				×		×		×									×		×				
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani						×				×		×	×	×			×	×	×	×		×	×
Baetis muticus						×			×										×	×	×	×	
Baetis atrebatinus																							
Centroptilum luteolum		×				×																×	
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum				×	×		×	×							×							×	
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N805565	7	159	R. Boyne	1996	Kelly-Quinn (present study)
N8060	7	159	R. Boyne	pre-1950	Harris manuscript
N8768	7	159	R. Boyne	1935/44	Harris manuscript
N8868	7	159	R. Boyne	1973-77	Whelan (1980a)
N9070	7	159	R. Boyne	pre-1950	Harris manuscript
N918712	7	159	R. Boyne	1946/47	Harris manuscript
N9774	7	159	R. Boyne	1944	Harris manuscript
O0070	7	159	R. Boyne	pre-1950	Harris manuscript
O025730	7	159	R. Boyne	1935	Harris manuscript
O032731	7	159	R. Boyne	1936/40	Harris manuscript
O0379	7	159	R. Boyne	1996	Ulster Museum Collection
N6020	7	159	Boyne/Bog of Allen	pre 1910	King (1889), King & Halbert (1910)
N832510	7	159	Dangan R.	1996	Kelly-Quinn (present study)
N558650	7	159	R. Deel	1989/91	Lynch (1994)
N589562	7	159	R. Deel	1989/91	Lynch (1994)
N598546	7	159	R. Deel	1989/91	Lynch (1994)
N599536	7	159	R. Deel	1989/91	Lynch (1994)
N602530	7	159	R. Deel	1929	Harris manuscript
N602530	7	159	R. Deel	1996	Kelly-Quinn (present study)
N6749	7	159	R. Deel	1929	Harris manuscript
N694492	7	159	R. Deel	1989/91	Lynch (1994)
N601448	7	159	Kinnegad R.	1991/92	Lynch (1994)
N601448	7	159	Kinnegad R.	1996	Kelly-Quinn (present study)

Caenis macrura																							×
Caenis luctuosa	×													×	×	×	×				×	×	×
Caenis rivulorum	×													×	×	×	×				×	×	
Caenis horaria																							×
Ephemerella ignita	×		×				×						×	×	×	×	×	×	×	×	×	×	
Ephemerella notata						×				×													
Ephemera danica		×		×	×			×			×			×	×	×	×						
Paraleptophlebia cincta												×										×	
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea			×						×					×	×	×					×		
Heptagenia sulphurea		×			×			×				×		×		×							
Electrogena lateralis														×									×
Rhithrogena semicolorata														×	×	×	×				×	×	
Rhithrogena germanica																							
Ecdyonurus venosus														×					×				
Ecdyonurus torrentis																							×
Ecdyonurus dispar														×	×	×	×				×	×	
Ecdyonurus insignis																							
Baetis vernus									×														
Baetis fuscatus																							
Baetis scambus	×					×			×														×
Baetis rhodani	×	×			×			×	×				×	×	×	×	×	×	×		×	×	
Baetis muticus	×		×			×	×		×					×		×	×			×	×		
Baetis atrebatinus						×			×					×									
Centroptilum luteolum									×			×								×			
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum						×				×													
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	N805565	N8060	N8768	N8868	N9070	N918712	N9774	O0070	O025730	O032731	O0379	N6020	N832510	N558650	N589562	N598546	N599536	N602530	N602530	N6749	N694492	N601448	N601448

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N658450	7	159	Kinnegad R.	1991/92	Lynch (1994)
N807538	7	159	Knightsbrook R.	1996	Kelly-Quinn (present study)
N997816	7	159	Mattock R.	1996	Kelly-Quinn (present study)
O003772	7	159	Mattock R.	1994	Kelly-Quinn (present study)
O012750	7	159	Mattock R.	1939	Harris manuscript
O012750	7	159	Mattock R.	1994	Kelly-Quinn (present study)
O013782	7	159	Mattock R.	1994	Kelly-Quinn (present study)
N505428	7	159	Milltownpass R.	1991/92	Lynch (1994)
N899618	7	159	Skane R.	1947	Harris manuscript
N6719	7	159	Slate R.	1947	Harris manuscript
N676584	7	159	Stoneyford R.	1996	Kelly-Quinn (present study)
N695560	7	159	Stoneyford R.	1991/92	Lynch (1994)
N7050	7	159	Stoneyford R.	pre-1950	Harris manuscript
N784340	7	159	Stoneyford R.	1991/92	Lynch (1994)
N7756	7	159	Trimblestown R.	1935	Harris manuscript
N7050	7	159	Trimblestown R.	1944	Harris manuscript
N694678	7	159	Trimblestown R.	1991/92	Lynch (1994)
N7060	7	159	Trimblestown R.	1968	Mc.Carthy (1977)
N7163	7	159	Trimblestown R.	1973-77	Whelan (1980a & b)
N5030	7	159	Yellow R.	1938	Harris manuscript
N595376	7	159	Yellow R.	1991/92	Lynch (1994)
N582387	7	159	Yellow R.	1991/92	Lynch (1994)
N532370	7	159	Yellow R.	1991/92	Lynch (1994)

Caenis macrura																							
Caenis luctuosa						×																	
Caenis rivulorum		×												×			×	×			×		
Caenis horaria																							
Ephemerella ignita		×						×				×		×			×	×		×	×	×	×
Ephemerella notata																							
Ephemera danica						×											×	×	×				
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																		×					
Heptagenia fuscogrisea																							
Heptagenia sulphurea						×	×											×					
Electrogena lateralis																							
Rhithrogena semicolorata			×	×		×	×										×	×		×			
Rhithrogena germanica																							
Ecdyonurus venosus				×	×													×					
Ecdyonurus torrentis																	×						
Ecdyonurus dispar		×															×						
Ecdyonurus insignis		×								×							×						
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus			×	×		×	×																
Baetis rhodani	×	×	×	×		×	×						×		×		×	×					×
Baetis muticus		×	×	×			×									×	×	×					
Baetis atrebatinus		×																					
Centroptilum luteolum									×		×												
Cloeon simile																							
Cloeon dipterum																		×					
Procloeon bifidum															×								
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	N658450	N807538	N997816	O003772	O012750	O012750	O013782	N505428	N899618	N6719	N676584	N695560	N7050	N784340	N7756	N7050	N694678	N7060	N7163	N5030	N595376	N582387	N532370

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N526360	7	159	Yellow R.	1991/92	Lynch (1994)
O048684	8	160	R. Nanny	1996	Kelly-Quinn (present study)
O134703	8	160	R. Nanny	pre-1950	Harris manuscript
N620097	9	-	Grand Canal	1996	Kelly-Quinn (present study)
N739268	9	-	Grand Canal	1996	Kelly-Quinn (present study)
N891228	9	-	Grand Canal	1929	Harris manuscript
N9020	9	-	Grand Canal	pre-1950	Harris manuscript
N987307	9	-	Grand Canal	1935	Harris manuscript
O030322	9	-	Grand Canal	1935/45	Harris manuscript
O010372	9	-	Royal Canal	1947	Harris manuscript
O0020	9	168	Bohernabreena Res.	1934/46	Harris manuscript
O032224	9	168	Brittas ponds	1935	Harris manuscript
T049987	9	168	L. Firrib	1995	Kelly-Quinn (present study)
N9000	9	168	Pollaphuca Res.	1966	Harris manuscript
N9000	9	168	Pollaphuca Res.	1958/59	Moriarty (1963)
N966108	9	168	Pollaphuca Res.	1992/93	Camon (1993)/MKQ*
N9808	9	168	Pollaphuca Res.	1996	Kelly-Quinn (present study)
N981121	9	168	Pollaphuca Res.	1992/93	Camon (1993)/MKQ*
N990083	9	168	Pollaphuca Res.	1996	Kelly-Quinn (present study)
N997143	9	168	Pollaphuca Res.	1992/93	Camon (1993)/MKQ*
N9010	9	168	Pollaphuca Res.	1944	Harris manuscript
O0000	9	168	Pollaphuca Res.	1944	Harris manuscript
O0010	9	168	Pollaphuca Res.	1944	Harris manuscript

NGR	N526360	O048684	O134703	N620097	N739268	N891228	N9020	N987307	O030322	O010372	O0020	O032224	T049987	N9000	N9000	N966108	N9808	N981121	N990083	N997143	N9010	O0000	O0010
Caenis macrura																							
Caenis luctuosa				×	×											×	×	×	×	×			
Caenis rivulorum																							
Caenis horaria															×		×		×				
Ephemerella ignita	×						×																
Ephemerella notata																							
Ephemera danica								×			×					×	×	×		×	×	×	
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina											×		×										
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis																							
Rhithrogena semicolorata						×		×	×														
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis								×															
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani		×	×									×									×	×	×
Baetis muticus																							
Baetis atrebatinus																							
Centroptilum luteolum								×															
Cloeon simile										×													
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris														×			×						
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
O003075	9	168	Pollaphuca Res.	1992/93	Camon (1993)/MKQ*
O011104	9	168	Pollaphuca Res.	1992/93	Camon (1993)/MKQ*
O012152	9	168	Pollaphuca Res.	1992/93	Camon (1993)/MKQ*
O0220	9	-	Pond anon	1938	Harris manuscript
O1020	9	-	Pond anon	1946	Harris manuscript
T2090	9	-	Pond anon	pre-1950	Harris manuscript
O0322	9	-	Pond mill race	1935	Harris manuscript
O058019	9	168	Annalecka Brk	1990	Kelly-Quinn *et al.* (1997)
O066027	9	168	Annalecka Brk	1990	Kelly-Quinn *et al.* (1997)
O064034	9	168	Annalecka Brk.	1992	Kelly-Quinn (1993)
O065030	9	168	Annalecka Brk.	1992	Kelly-Quinn (1993)
O066026	9	168	Annalecka Brk.	1992	Kelly-Quinn (1993)
O072037	9	168	Annalecka Brk.	1992	Kelly-Quinn (1993)
O0714	9	168	Athdown Brk.	1933	Kimmins (1934)
O0714	9	168	Athdown Brk.	1933	Natural History Museum London (Perkins)
O079145	9	168	Athdown Brk.	1990	Kelly-Quinn *et al.* (1997)
O036042	9	168	Ballinagee Brk	1990	Kelly-Quinn *et al.* (1997)
O051039	9	168	Ballinagee Brk	1990	Kelly-Quinn *et al.* (1997)
O051038	9	168	Ballinagee Brk.	1992	Kelly-Quinn (1993)
O060131	9	168	Ballydonnel Brk	1990	Kelly-Quinn *et al.* (1997)
O068134	9	168	Ballylow Brk.	1990	Kelly-Quinn *et al.* (1997)
O0216	9	168	Brittas R.	1930	Harris manuscript
O026181	9	168	Brittas R.	1930	Harris manuscript

NGR	O003075	O011104	O012152	O0220	O1020	T2090	O0322	O058019	O066027	O064034	O065030	O066026	O072037	O0714	O0714	O079145	O036042	O051039	O051038	O060131	O068134	O0216	O026181
Caenis macrura																							
Caenis luctuosa	×	×	×																				
Caenis rivulorum																					×		
Caenis horaria																							
Ephemerella ignita																	×						
Ephemerella notata																							
Ephemera danica	×																						
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis																							
Rhithrogena semicolorata									×								×			×			
Rhithrogena germanica																							
Ecdyonurus venosus																					×		
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																	×						
Baetis rhodani							×									×	×			×	×		
Baetis muticus																×	×	×					
Baetis atrebatinus																							
Centroptilum luteolum																						×	×
Cloeon simile																							
Cloeon dipterum				×	×	×																	
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris									×					×	×		×	×					
Siphlonurus alternatus																							
Ameletus inopinatus								×	×	×	×	×	×				×	×	×				

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
O030211	9	168	Brittas R.	1947	Harris manuscript
O057262	9	168	Brittas R. trib.	1998	McCaul (unpublished records)
O062257	9	168	Brittas R. trib.	1998	McCaul (unpublished records)
O066268	9	168	Brittas R. trib.	1998	McCaul (unpublished records)
O068262	9	168	Brittas R. trib.	1998	McCaul (unpublished records)
O073225	9	168	Brittas R. trib.	1998	McCaul (unpublished records)
O049259	9	168	Camac R. trib.	1998	McCaul (unpublished records)
O049261	9	168	Camac R. trib.	1998	McCaul (unpublished records)
O053265	9	168	Camac R. trib.	1998	McCaul (unpublished records)
O055259	9	168	Camac R. trib.	1998	McCaul (unpublished records)
O1020	9	168	R. Dodder	1978/86	Glynn (1978)
O1020	9	168	R. Dodder	1996	M.Kennedy (unpublished records)
O1030	9	168	R. Dodder	1980's,1996	M.Kennedy (unpublished records)
O107273	9	168	R. Dodder	1947	Harris manuscript
O108274	9	168	R. Dodder	pre 1910	King (1889), King & Halbert (1910)
O152298	9	168	R. Dodder	1996	Kelly-Quinn (present study)
O1529	9	168	R. Dodder	pre 1910	King (1889), King & Halbert (1910)
O089244	9	168	R. Dodder	1947	Harris manuscript
O096263	9	168	R. Dodder	1947	Harris manuscript
O108274	9	168	R. Dodder	1930/47	Harris manuscript
O14429	9	168	R. Dodder	1947	Harris manuscript
O163300	9	168	R. Dodder	1947	Harris manuscript
O167303	9	168	R. Dodder	1948	Harris manuscript

Caenis macrura																							
Caenis luctuosa											x												
Caenis rivulorum		x	x				x			x													
Caenis horaria																							
Ephemerella ignita		x	x	x	x	x	x			x	x			x				x	x	x	x	x	x
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis											x		x	x									
Rhithrogena semicolorata			x		x		x			x	x				x	x		x	x				
Rhithrogena germanica													x										x
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar											x										x		
Ecdyonurus insignis																					x		
Baetis vernus																	x						
Baetis fuscatus																							
Baetis scambus											x												
Baetis rhodani		x	x	x	x	x	x	x	x	x	x			x		x		x	x		x	x	x
Baetis muticus		x	x				x	x		x	x									x			
Baetis atrebatinus																							
Centroptilum luteolum	x																			x			
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																					x		
Siphlonurus armatus																							
Siphlonurus lacustris												x											
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	O030211	O057262	O062257	O066268	O068262	O073225	O049259	O049261	O053265	O055259	O1020	O1020	O1030	O107273	O108274	O152298	O1529	O089244	O096263	O108274	O14429	O163300	O167303

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
O1730	9	168	R. Dodder	1947	Harris manuscript
O173308	9	168	R. Dodder	1945/46	Harris manuscript
O177325	9	168	R. Dodder	1932	Harris manuscript
N978030	9	168	Douglas R.	1990	Kelly-Quinn *et al.* (1997)
O175270	9	168	Dundrum Str.	1996	Kelly-Quinn (present study)
O027036	9	168	Garryknock Str.	1990	Kelly-Quinn *et al.* (1997)
O027036	9	168	Garryknock Str.	1996	Kelly-Quinn (present study)
O029028	9	168	Garryknock Str.	1990	Kelly-Quinn *et al.* (1997)
O029029	9	168	Garryknock Str.	1990	Kelly-Quinn *et al.* (1997)
O021013	9	168	Glenremore Brk.	1990	Kelly-Quinn *et al.* (1997)
N980034	9	168	Kings R	Pre-1950	Harris manuscript
N981033	9	168	Kings R.	1990	Kelly-Quinn *et al.* (1997)
O145132	9	168	Liffey Head R.	1929/31	Harris manuscript
N810140	9	168	R. Liffey	1996	Foster (1996)/MKQ*
N820140	9	168	R. Liffey	1996	Foster (1996)/MKQ*
N8216	9	168	R. Liffey	1960's	Kennedy & Fitzmaurice (1971)
N855195	9	168	R. Liffey	1996	Foster (1996)/MKQ*
N890195	9	168	R. Liffey	1996	Foster (1996)/MKQ*
N927098	9	168	R. Liffey	1996	Foster (1996)/MKQ*
N936266	9	168	R. Liffey	1929-38	Frost (1939, 1942)
N821120	9	168	R. Liffey	1935	Harris manuscript
N8214	9	168	R. Liffey	pre-1970	M.Kennedy (unpublished records)
N8410	9	168	R. Liffey	pre-1970	M.Kennedy (unpublished records)

Caenis macrura																				×			
Caenis luctuosa																							
Caenis rivulorum		×												×									
Caenis horaria																							
Ephemerella ignita		×	×	×							×			×		×	×		×	×	×		
Ephemerella notata																×				×		×	×
Ephemera danica																×	×			×			
Paraleptophlebia cincta																				×	×		
Leptophlebia marginata																							
Leptophlebia vespertina													×										
Heptagenia fuscogrisea																							
Heptagenia sulphurea														×	×		×			×			
Electrogena lateralis																	×						
Rhithrogena semicolorata		×						×			×	×								×	×		
Rhithrogena germanica																							
Ecdyonurus venosus							×	×						×		×	×			×			
Ecdyonurus torrentis																	×						
Ecdyonurus dispar											×					×							
Ecdyonurus insignis	×	×												×			×						
Baetis vernus						×	×																
Baetis fuscatus																							
Baetis scambus		×												×					×				
Baetis rhodani	×	×	×	×	×	×	×	×	×	×		×		×	×	×	×	×	×	×			
Baetis muticus		×	×									×		×			×						
Baetis atrebatinus																							
Centroptilum luteolum																×							
Cloeon simile																							
Cloeon dipterum																				×			
Procloeon bifidum											×									×	×		×
Siphlonurus armatus																							
Siphlonurus lacustris						×						×					×						
Siphlonurus alternatus																	×						
Ameletus inopinatus										×													
NGR	O1730	O173308	O177325	N978030	O175270	O027036	O027036	O029028	O029029	O021013	N980034	N981033	O145132	N810140	N820140	N8216	N855195	N890195	N927098	N936266	N821120	N8214	N8410

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N853208	9	168	R. Liffey	1930/46/53/72	Harris manuscript
N880271	9	168	R. Liffey	pre 1950	Harris manuscript
N9000	9	168	R. Liffey	1966	M.Kennedy (unpublished records)
N924292	9	168	R. Liffey	1932/34/35/46	Harris manuscript
N936266	9	168	R. Liffey	1941	Harris manuscript
N9733	9	168	R. Liffey	1960's	Kennedy & Fitzmaurice (1971)
N9733	9	168	R. Liffey	pre-1970	M.Kennedy (unpublished records)
N975328	9	168	R. Liffey	1936	Harris manuscript
N9808	9	168	R. Liffey	1935	Harris manuscript
O007355	9	168	R. Liffey	1996	Foster (1996)/MKQ*
O025163	9	168	R. Liffey	1945/48	Harris manuscript
O0335	9	168	R. Liffey	1944/48	Harris manuscript
O057145	9	168	R. Liffey	1946/47/58	Harris manuscript
O057148	9	168	R. Liffey	1929-38	Frost (1939, 1942, 1945)
O057148	9	168	R. Liffey	1990	Kelly-Quinn *et al.* (1997)
O057148	9	168	R. Liffey	1996	Foster (1996)/MKQ*
O110128	9	168	R. Liffey	1990	Kelly-Quinn *et al.* (1997)
O116124	9	168	R. Liffey	1990	Kelly-Quinn *et al.* (1997)
O1313	9	168	R. Liffey	1996	Kelly-Quinn (present study)
O1535	9	168	R. Liffey	1973-77	Whelan (1980a)
N9933	9	168	R. Liffey	1947	Harris manuscript
O0216	9	168	R. Liffey	1928/42/47	Harris manuscript
O1034	9	168	R. Liffey	1936	Harris manuscript

NGR	N853208	N880271	N9000	N924292	N936266	N9733	N9733	N975328	N9808	O007355	O025163	O0335	O057145	O057148	O057148	O057148	O110128	O116124	O1313	O1535	N9933	O0216	O1034
Caenis macrura														×									
Caenis luctuosa										×			×										
Caenis rivulorum																							
Caenis horaria																							
Ephemerella ignita	×	×	×	×	×			×	×	×	×	×	×	×	×	×					×	×	×
Ephemerella notata	×						×			×		×											
Ephemera danica				×		×														×		×	
Paraleptophlebia cincta				×																	×		
Leptophlebia marginata				×																			
Leptophlebia vespertina														×									
Heptagenia fuscogrisea																							
Heptagenia sulphurea				×		×						×											
Electrogena lateralis																							
Rhithrogena semicolorata		×									×	×		×	×							×	
Rhithrogena germanica								×	×			×									×		
Ecdyonurus venosus						×								×									
Ecdyonurus torrentis																							
Ecdyonurus dispar	×	×		×		×						×	×										
Ecdyonurus insignis		×		×		×																×	×
Baetis vernus													×	×		×			×				
Baetis fuscatus																							
Baetis scambus	×									×		×			×						×	×	×
Baetis rhodani	×			×		×				×			×	×	×		×	×					×
Baetis muticus				×						×					×							×	
Baetis atrebatinus																							×
Centroptilum luteolum	×			×		×																	
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum	×			×				×				×	×										×
Siphlonurus armatus																							
Siphlonurus lacustris			×								×			×		×	×	×	×				
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
O032351	9	168	R. Liffey/Rye	pre 1910	King (1889), King & Halbert (1910)
N936375	9	168	Lyreen Str.	1994/95	Kelly (1996)
O213412	9	165	Mayne R.	1994/96	Kelly-Quinn *et al* (1994)
O220416	9	165	Mayne R.	1994/96	Kelly-Quinn *et al* (1994)
O222414	9	165	Mayne R.	1994/96	Kelly-Quinn *et al* (1994)
O135256	9	168	Owendoher Str.	1979/1981/82	Kelly-Quinn (1980,1986),
					Kelly-Quinn & Bracken (1988, 1990)
O136257	9	168	Owendoher Str.	1979/1981/82	Kelly-Quinn (1980,1986),
					Kelly-Quinn & Bracken (1988, 1990)
O136268	9	168	Owendoher Str.	1979/1981/82	Kelly-Quinn (1980,1986), .
					Kelly-Quinn & Bracken (1988, 1990)
O136270	9	168	Owendoher Str.	1979/1981/82	Kelly-Quinn (1980,1986),
					Kelly-Quinn & Bracken (1988, 1990)
O136271	9	168	Owendoher Str.	1979/1981/82	Kelly-Quinn (1980,1986),
					Kelly-Quinn & Bracken (1988, 1990)
O141278	9	168	Owendoher Str.	1979/1981/82	Kelly-Quinn (1980,1986),
					Kelly-Quinn & Bracken (1988, 1990)
O0040	9	167	Pinkeen R.	1993/96/98	Kelly & Bracken (1993, 1996)/MKQ*
O1431	9	168	Poddle R.	1947	Harris manuscript
N898398	9	168	Rye Water	1992-95	Kelly (1992, 1996)
N930394	9	168	Rye Water	1992-95	Kelly (1992, 1996)
N9339	9	168	Rye Water	1946/48	Harris manuscript
N980377	9	168	Rye Water	1992-95	Kelly (1992, 1996)

Caenis macrura																							
Caenis luctuosa																			×	×		×
Caenis rivulorum																			×	×	×	×
Caenis horaria																							
Ephemerella ignita	×	×				×		×		×		×		×		×				×	×		×
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta	×																					×	
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea	×																				×		
Electrogena lateralis																							
Rhithrogena semicolorata						×		×		×		×		×		×		×		×		×	
Rhithrogena germanica																							
Ecdyonurus venosus	×																			×			
Ecdyonurus torrentis																							
Ecdyonurus dispar										×		×								×	×		×
Ecdyonurus insignis																				×			
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus	×					×										×			×			×	
Baetis rhodani		×	×	×	×	×		×		×		×		×		×		×		×	×		×
Baetis muticus	×					×		×		×		×		×		×				×	×	×	×
Baetis atrebatinus																							
Centroptilum luteolum	×																					×	×
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																						×	
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	O032351	N936375	O213412	O220416	O222414	O135256		O136257		O136268		O136270		O136271		O141278		O0040	O1431	N898398	N930394	N9339	N980377

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N985375	9	168	Rye Water	1992-95	Kelly (1992, 1996)
N988373	9	168	Rye Water	1992-95	Kelly (1992, 1996)
N993369	9	168	Rye Water	1992-95	Kelly (1992, 1996)
O002366	9	168	Rye Water	1992-95	Kelly (1992, 1996)
O0035	9	168	Rye Water	1930/39/46	Harris manuscript
O005358	9	168	Rye Water	1992-95	Kelly (1992, 1996)
O136424	9	166	Santry R.	1996	Kearns (1996)/MKQ*
O188400	9	166	Santry R.	1996	Kearns (1996)/MKQ*
O211384	9	166	Santry R.	1996	Kearns (1996)/MKQ*
O048165	9	168	Shankill R.	1991-93	Igoe (1999)
O048166	9	168	Shankill R.	1990	Kelly-Quinn *et al.* (1997)
O049166	9	168	Shankill R.	1991-93	Igoe (1999)
O154095	9	168	Sheepbanks Brk.	1990	Kelly-Quinn *et al.* (1997)
O214433	9	t1	Sluice R.	1994	Kelly-Quinn *et al.* (1994)
O225432	9	t1	Sluice R.	1994	Kelly-Quinn *et al.* (1994)
O017429	9	167	R. Tolka	1974/75	Norton (1975), Norton & Bracken (1980)
O027416	9	167	R. Tolka	1974/75	Norton (1975), Norton & Bracken (1980)
O035411	9	167	R. Tolka	1974/75	Norton (1975), Norton & Bracken (1980)
O067403	9	167	R. Tolka	1974/75/84	Norton (1975), Norton & Bracken, O'Maoileidigh (1985)
O078390	9	167	R. Tolka	1974/75	Norton (1975), Norton & Bracken (1980)
O109376	9	167	R. Tolka	1974/75	Norton (1975), Norton & Bracken (1980)
O123377	9	167	R. Tolka	1974/75	Norton (1975), Norton & Bracken (1980)
O140380	9	167	R. Tolka	pre 1910	King (1889), King & Halbert (1910)

Caenis macrura																							×
Caenis luctuosa	×	×	×	×		×										×	×	×					
Caenis rivulorum	×	×	×	×	×	×					X.X												
Caenis horaria																							
Ephemerella ignita	×	×	×	×		×				×	×	×		×		×	×	×	×				
Ephemerella notata																	×						
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis																							
Rhithrogena semicolorata		×			×					×		×											
Rhithrogena germanica																							
Ecdyonurus venosus											×												
Ecdyonurus torrentis																							
Ecdyonurus dispar	×	×		×						×		×											
Ecdyonurus insignis					×																		
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus					×																		
Baetis rhodani	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	
Baetis muticus	×	×	×	×		×															×		
Baetis atrebatinus																							
Centroptilum luteolum			×		×																		×
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris													×										
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	N985375	N988373	N993369	O002366	O0035	O005358	O136424	O188400	O211384	O048165	O048166	O049166	O154095	O214433	O225432	O017429	O027416	O035411	O067403	O078390	O109376	O123377	O140380

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
O141375	9	167	R. Tolka	1974/75	Norton (1975), Norton & Bracken (1980)
O152372	9	167	R. Tolka	1974/75	Norton (1975), Norton & Bracken (1980)
O162367	9	167	R. Tolka	1974/75	Norton (1975), Norton & Bracken (1980)
T055932	10	171	Arts L.	1948	Harris manuscript
T059931	10	171	Arts L.	1995	Kelly-Quinn (present study)
O136161	10	169	L. Bray	1931	Harris manuscript
O140164	10	169	L. Bray	1996	Kelly-Quinn (present study)
O141164	10	169	L. Bray	1996	Kelly-Quinn (present study)
O1000	10	171	L. Dan	1996	Kelly-Quinn (present study)
O1503	10	171	L. Dan	1972/73/74	O'Connor (1975), O'Connor & Bracken (1978)
T118966	10	171	Glendalough Lr.	1995	Kelly-Quinn (present study)
T1096	10	171	Glendalough Upper	1984/85/87/88/89/90	Bowman (1986, 1991a &b)
T0090	10	171	Kelly's L. (stream)	1947	Harris manuscript
O0000	10	171	L. Ouler	1996	Kelly-Quinn (present study)
O0000	10	171	L. Ouler/outlet	1996	Kelly-Quinn (present study)
O1000	10	170	Vartry Res.	1971	Harris manuscript
O198047	10	170	Vartry Res.	1996	Kelly-Quinn (present study)
O2000	10	170	Vartry Res.	1971	Harris manuscript
O2000	10	170	Vartry Res.	1984	Dauod (1986), Dauod *et al.* (1986)
T072871	10	171	Anon str.at Slieve Maan	1996	Kelly-Quinn (present study)
O2611	10	y1	Anon str.	1989	Reynolds (unpublished records)
T125820	10	171	Aughrim R. trib.	1995	Kelly-Quinn (present study)
T144703	10	171	Aughrim R. trib.	1995	Kelly-Quinn (present study)

Caenis macrura																							
Caenis luctuosa																			×				
Caenis rivulorum																							
Caenis horaria									×	×									×				
Ephemerella ignita													×									×	
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta												×											
Leptophlebia marginata												×											
Leptophlebia vespertina					×	×	×	×	×	×	×	×		×	×				×				
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis											×												
Rhithrogena semicolorata											×											×	
Rhithrogena germanica																							
Ecdyonurus venosus																						×	×
Ecdyonurus torrentis																							
Ecdyonurus dispar																					×		
Ecdyonurus insignis																							
Baetis vernus													×				×						
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani	×	×	×																×		×	×	×
Baetis muticus																						×	×
Baetis atrebatinus																							
Centroptilum luteolum																			×				
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris				×						×						×	×	×					
Siphlonurus alternatus																							
Ameletus inopinatus															×					×			×
NGR	O141375	O152372	O162367	T055932	T059931	O136161	O140164	O141164	O1000	O1503	T118966	T1096	T0090	O0000	O0000	O1000	O198047	O2000	O2000	T072871	O2611	T125820	T144703

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
T1979	10	171	Avoca R.	1980's	Reynolds (1986)
T2081	10	171	Avoca R.	1980's	Reynolds (1986)
T0090	10	171	Avonbeg R.	1946	Harris manuscript
T035962	10	171	Avonbeg R.	1970's	Fahy (1977)
T104907	10	171	Avonbeg R.	1995	Kelly-Quinn (present study)
T168817	10	171	Avonbeg R.	1995	Kelly-Quinn (present study)
T054938	10	171	Avonbeg R. trib.	1996	Kelly-Quinn (present study)
T165995	10	171	Avonmore R.	1990	Kelly-Quinn *et al.* (1997)
T1694	10	171	Avonmore R.	1960's	Kennedy & Fitzmaurice (1971)
T184903	10	171	Avonmore R.	1996	Kelly-Quinn (present study)
T190831	10	171	Avonmore R.	1996	Kelly-Quinn (present study)
O173007	10	171	Avonmore R. trib.	1996	Kelly-Quinn (present study)
O163085	10	171	Boleyhorrigan Brk.	1990	Kelly-Quinn *et al.* (1997)
T107908	10	171	Cloghernagh Brk.	1996	Kelly-Quinn (present study)
O120080	10	171	Cloghoge Brk.	1990	Kelly-Quinn *et al.* (1997)
O161059	10	171	Cloghoge Brk.	1990	Kelly-Quinn *et al.* (1997)
O143099	10	171	Cloghoge R.	1996	Kelly-Quinn (present study)
O144099	10	171	Cloghoge R.	1990	Kelly-Quinn *et al.* (1997)
O149092	10	171	Cloghoge R.	1990	Kelly-Quinn *et al.* (1997)
O142180	10	169	Dargle R.	1992	Byrne (1994)/MKQ*
O191123	10	169	Dargle R.	1995	Kelly-Quinn (present study)
O203191	10	169	Dargle R.	1990	Kelly-Quinn *et al.* (1997)
O205148	10	169	Dargle R.	1992	Byrne (1994)/MKQ*

Caenis macrura																							
Caenis luctuosa																							
Caenis rivulorum						×		×														×	
Caenis horaria																							
Ephemerella ignita			×		×	×		×	×			×										×	×
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea		×																					
Electrogena lateralis		×																					
Rhithrogena semicolorata	×	×		×	×	×	×				×	×				×			×	×		×	×
Rhithrogena germanica							×																
Ecdyonurus venosus	×	×			×		×			×	×	×									×	×	
Ecdyonurus torrentis																					×		
Ecdyonurus dispar						×						×											
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																×						×	
Baetis rhodani	×	×		×	×	×		×			×	×	×		×	×		×	×	×		×	×
Baetis muticus	×	×			×	×					×	×											
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile																							
Cloeon dipterum		×																					
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris		×													×								
Siphlonurus alternatus																							
Ameletus inopinatus				×			×							×	×		×	×		×			
NGR	T1979	T2081	T0090	T035962	T104907	T168817	T054938	T165995	T1694	T184903	T190831	O173007	O163085	T107908	O120080	O161059	O143099	O144099	O149092	O142180	O191123	O203191	O205148

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
O215159	10	169	Dargle R.	1992	Byrne (1994)/MKQ*
O221162	10	169	Dargle R.	1992	Byrne (1994)/MKQ*
O221163	10	169	Dargle R.	pre-1950	Harris manuscript
O231174	10	169	Dargle R.	1992	Byrne (1994)/MKQ*
O2417	10	169	Dargle R.	1946	Harris manuscript
O245173	10	169	Dargle R.	1992	Byrne (1994)/MKQ*
T133947	10	171	Derrybawn R.	1990	Kelly-Quinn *et al.* (1997)
O072023	10	171	Glashaboy Brk.	1990	Kelly-Quinn *et al.* (1997)
O072023	10	171	Glashaboy Brk.	1996	Kelly-Quinn (present study)
O1417	10	169	Glencree R.	1996	Kelly-Quinn (present study)
O144177	10	169	Glencree R.	1992	Kelly-Quinn (1993)
O202149	10	169	Glencree R.	1990/92	Kelly-Quinn *et al.* (1997)
O1621	10	169	Glencullen R.	1976	Clabby (1971), Clabby & Bracken (1976)
O1919	10	169	Glencullen R.	1976	Clabby (1971), Clabby & Bracken (1976)
O2118	10	169	Glencullen R.	1997	Kelly-Quinn (present study)
O2118	10	169	Glencullen R.	1976	Clabby (1971), Clabby & Bracken (1976)
O2118	10	169	Glencullen R.	1980-1999	Kelly-Quinn/Reynolds (unpublished records)
O2217	10	169	Glencullen R.	1976	Clabby (1971), Clabby & Bracken (1976)
O2717	10	169	Glencullen R.	1931/48/71	Harris manuscript
O2118	10	169	Glencullen R. trib (tufa)	1997	Kelly-Quinn (present study)
T095982	10	171	Glendasan R.	1990	Kelly-Quinn *et al.* (1997)
T100982	10	171	Glendasan R.	1995	Kelly-Quinn (present study)
T086998	10	171	Glendasan R.	1998	Kelly-Quinn (present study)

NGR	O215159	O221162	O221163	O231174	O2417	O245173	T133947	O072023	O072023	O1417	O144177	O202149	O1621	O1919	O2118	O2118	O2118	O2217	O2717	O2118	T095982	T100982	T086998
Caenis macrura																							
Caenis luctuosa																							
Caenis rivulorum														×		×		×	×				
Caenis horaria																							
Ephemerella ignita	×	×		×	×	×							×	×	×	×	×	×			×	×	
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																	×						
Leptophlebia marginata																							
Leptophlebia vespertina									×								×						
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis					×									×		×		×	×				
Rhithrogena semicolorata	×	×		×		×							×	×		×	×	×	×	×	×	×	
Rhithrogena germanica										×		×											
Ecdyonurus venosus													×	×		×	×						
Ecdyonurus torrentis														×	×	×							
Ecdyonurus dispar													×	×	×	×		×					
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus					×									×				×				×	
Baetis rhodani	×	×	×	×		×	×	×				×	×	×	×	×	×	×	×	×	×	×	
Baetis muticus					×											×	×			×		×	
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris												×											
Siphlonurus alternatus																							
Ameletus inopinatus											×		×										×

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
T075963	10	171	Glenealo R.	1984/85/87/88/89/90	Bowman (1986, 1991a &b)
T080961	10	171	Glenealo R.	1996	Kelly-Quinn (present study)
T087962	10	171	Glenealo R.	1990	Kelly-Quinn *et al.* (1997)
T113965	10	171	Glenealo R.	1990	Kelly-Quinn *et al.* (1997)
O113030	10	171	Glenmacnass R.	1992	Kelly-Quinn (1993)
O115030	10	171	Glenmacnass R.	1990	Kelly-Quinn *et al.* (1997)
O115030	10	171	Glenmacnass R.	1996	Kelly-Quinn (present study)
O114002	10	171	Glenmacnass R. trib	1996	Kelly-Quinn (present study)
O104055	10	171	Inchavore R.	1990	Kelly-Quinn *et al.* (1997)
O104055	10	171	Inchavore R.	1996	Kelly-Quinn (present study)
O106064	10	171	Inchavore R.	1990	Kelly-Quinn *et al.* (1997)
O106064	10	171	Inchavore R.	1996	Kelly-Quinn (present study)
O113074	10	171	Inchavore R.	1990	Kelly-Quinn *et al.* (1997)
O130047	10	171	Inchavore R.	1996/97	Kelly-Quinn (present study)
O2908	10	y1	Kilcoole R.	1948	Harris manuscript
O140164	10	169	Outlet Str. From L. Bray	1996	Kelly-Quinn (present study)
T011848	10	171	Ow R.	1996	Kelly-Quinn (present study)
T055863	10	171	Ow R.	1995	Kelly-Quinn (present study)
T071848	10	171	Ow R.	1996	Kelly-Quinn (present study)
T117792	10	171	Ow R.	1995	Kelly-Quinn (present study)
T092811	10	171	Ow R. trib.	1996	Kelly-Quinn (present study)
T2390	10	173	Potter's R.	1933	Kimmins (1934)
T2390	10	171	Potter's R.	1933	Natural History Museum London (Perkins)

NGR	T075963	T080961	T087962	T113965	O113030	O115030	O115030	O114002	O104055	O104055	O106064	O106064	O113074	O130047	O2908	O140164	T011848	T055863	T071848	T117792	T092811	T2390	T2390
Caenis macrura																							
Caenis luctuosa																							
Caenis rivulorum																							
Caenis horaria																							
Ephemerella ignita	×			×														×		×			
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina				×								×											
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis																							
Rhithrogena semicolorata	×		×			×	×	×						×					×	×	×		
Rhithrogena germanica																				×			
Ecdyonurus venosus	×																×		×			×	×
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis															×								
Baetis vernus										×		×				×		×		×			
Baetis fuscatus																							
Baetis scambus	×	×																		×			
Baetis rhodani	×		×	×		×			×									×	×	×	×		
Baetis muticus																					×		
Baetis atrebatinus																							
Centroptilum luteolum	×																			×			
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris	×		×			×			×		×		×										
Siphlonurus alternatus	×																						
Ameletus inopinatus	×				×		×	×		×		×				×							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
T265879	10	173	Potter's R.	1994	Keegan (1995)/MKQ*
T297853	10	173	Potter's R.	1994	Keegan (1995)/MKQ*
T308841	10	173	Potter's R.	1994	Keegan (1995)/MKQ*
T250852	10	174	Redcross R.	1994	Williams (1995)/MKQ*
T265810	10	174	Redcross R.	1994	Williams (1995)/MKQ*
T287797	10	174	Redcross R.	1994	Williams (1995)/MKQ*
O2020	10	x1	Shanganagh R.	1993	O'Brien (1994)/MKQ*
O218272	10	x1	Shanganagh R.	1935	Harris manuscript
T272907	10	172	Three Mile Water	1994	Keegan (1995)/MKQ*
T294897	10	172	Three Mile Water	1994	Keegan (1995)/MKQ*
T318880	10	172	Three Mile Water	1994	Keegan (1995)/MKQ*
T106737	10	171	Tomnaskela Str.	1995	Kelly-Quinn (present study)
O196048	10	170	Vartry inflow	1996	Kelly-Quinn (present study)
O204045	10	170	Vartry R.	1985	Kelly-Quinn (present study)
O215064	10	169	Vartry R.	1986	Dauod (1986), Dauod *et al.* (1986)
T220991	10	170	Vartry R.	1993	Little (1994)/MKQ*
T256978	10	170	Vartry R.	1993	Little (1994)/MKQ*
T270973	10	170	Vartry R.	1993	Little (1994)/MKQ*
T290968	10	170	Vartry R.	1993	Little (1994)/MKQ*
O182058	10	170	Vartry Res. Feeder Str.	1991-93	Igoe (1999)
O178047	10	170	Vartry Res. Feeder Str.	1990	Kelly-Quinn *et al.* (1997)
O183059	10	170	Vartry Res. Feeder Str.	1990	Kelly-Quinn *et al.* (1997)
O188057	10	170	Vartry Res. Feeder Str.	1990	Kelly-Quinn *et al.* (1997)

Caenis macrura																							
Caenis luctuosa														×									
Caenis rivulorum		×																	×				
Caenis horaria																							
Ephemerella ignita												×				×					×	×	×
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis																							
Rhithrogena semicolorata	×	×	×	×	×	×	×	×		×	×		×	×		×	×	×	×	×	×	×	
Rhithrogena germanica																							
Ecdyonurus venosus														×							×		
Ecdyonurus torrentis												×											
Ecdyonurus dispar	×	×	×	×	×		×				×			×		×	×	×	×				
Ecdyonurus insignis																							
Baetis vernus													×										
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani	×	×	×	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×	
Baetis muticus												×											
Baetis atrebatinus																							
Centroptilum luteolum														×	×								
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	T265879	T297853	T308841	T250852	T265810	T287797	O2020	O218272	T272907	T294897	T318880	T106737	O196048	O204045	O215064	T220991	T256978	T270973	T290968	O182058	O178047	O183059	O188057

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
O192040	10	170	Vartry Res. Feeder Str.	1990	Igoe (1991)/MKQ*
O192057	10	170	Vartry Res. Feeder Str.	1990	Igoe (1991)/MKQ*
O192058	10	170	Vartry Res. Feeder Str.	1990	Kelly-Quinn *et al.* (1997)
O193042	10	170	Vartry Res. Feeder Str.	1990	Igoe (1991)/MKQ*
O193048	10	170	Vartry Res. Feeder Str.	1990	Kelly-Quinn *et al.* (1997)
O199086	10	170	Vartry Res. Feeder Str.	1990	Meade (1993)/MKQ*
O200085	10	170	Vartry Res. Feeder Str.	1990	Kelly-Quinn *et al.* (1997)
O204066	10	170	Vartry Res. Feeder Str.	1990	Kelly-Quinn *et al.* (1997)
O206091	10	170	Vartry Res. Feeder Str.	1990	Kelly-Quinn *et al.* (1997)
O209085	10	170	Vartry Res. Feeder Str.	1990	Meade (1993)/MKQ*
O214091	10	169	Vartry Res. Feeder Str.	1990	Kelly-Quinn *et al.* (1997)
T1164	11	f2	Blackwater R.	1994	Kelly-Quinn (present study)
T202665	11	176	Inch R.	1994	Williams (1995)/MKQ*
T217650	11	176	Inch R.	1994	Williams (1995)/MKQ*
T225644	11	176	Inch R.	1994	Williams (1995)/MKQ*
T190567	11	177	Owenavorragh	1994	Kelly-Quinn (present study)
S891351	12	175	Boro R.	1993	Kelly-Quinn & Bracken (1994)
S915328	12	175	Boro R.	1993	Kelly-Quinn & Bracken (1994)
S942353	12	175	Boro R.	1993	Kelly-Quinn & Bracken (1994)
S962365	12	175	Boro R.	1993	Kelly-Quinn & Bracken (1994)
S969363	12	175	Boro R.	1993	Kelly-Quinn & Bracken (1994)
S865487	12	175	Boro R. (headwater)	1995	Kelly-Quinn (present study)
S833432	12	175	R. Boro headwaters	1995	Kelly-Quinn (present study)

Caenis macrura																							
Caenis luctuosa																							
Caenis rivulorum																	×	×	×	×	×		
Caenis horaria																							
Ephemerella ignita			×		×		×	×	×		×	×					×	×	×	×	×	×	×
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea																			×	×			
Electrogena lateralis																							
Rhithrogena semicolorata	×	×		×	×		×	×	×		×	×	×	×	×		×			×			×
Rhithrogena germanica																							
Ecdyonurus venosus	×			×	×						×												×
Ecdyonurus torrentis																							
Ecdyonurus dispar						×				×		×			×				×				
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Baetis muticus												×											×
Baetis atrebatinus																							
Centroptilum luteolum										×													
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	O192040	O192057	O192058	O193042	O193048	O199086	O200085	O204066	O206091	O209085	O214091	T1164	T202665	T217650	T225644	T190567	S891351	S915328	S942353	S962365	S969363	S865487	S833432

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
S999894	12	175	Derreen R.	1995	Kelly-Quinn (present study)
S877633	12	175	Derry R.	1995	Kelly-Quinn (present study)
S981776	12	175	Derry R.	1995	Kelly-Quinn (present study)
T109779	12	175	Derry R.	1995	Kelly-Quinn (present study)
T020746	12	175	Derry Water	1995	Kelly-Quinn (present study)
T038725	12	175	Derry Water	1995	Kelly-Quinn (present study)
S832776	12	175	R. Slaney	1995	Kelly-Quinn (present study)
S855831	12	175	R. Slaney	1995	Kelly-Quinn (present study)
S855831	12	175	R. Slaney	1946	Harris manuscript
S855831	12	175	R. Slaney	1995	Duffy (1995)/MKQ*
S873885	12	175	R. Slaney	1995	Duffy (1995)/MKQ*
S8788	12	175	R. Slaney	1965	Kennedy & Fitzmaurice (1971)
S902935	12	175	R. Slaney	1995	Duffy (1995)/MKQ*
S9030	12	175	R. Slaney	1995	Duffy (1995)/MKQ*
S913567	12	175	R. Slaney	1936/53/59	Harris manuscript
S9156	12	175	R. Slaney	1936	Harris manuscript
S925975	12	175	R. Slaney	1935	Harris manuscript
S938942	12	175	R. Slaney	1995	Kelly-Quinn (present study)
S940940	12	175	R. Slaney	1995	Duffy (1995)/MKQ*
S958924	12	175	R. Slaney	1995	Kelly-Quinn (present study)
S958925	12	175	R. Slaney	1995	Duffy (1995)/MKQ*
T0521	12	175	R. Slaney	1973-77	Whelan (1980a & b)
S898436	12	175	Urrin R.	1995	Kelly-Quinn (present study)

NGR	S999894	S877633	S981776	T109779	T020746	T038725	S832776	S855831	S855831	S855831	S873885	S8788	S902935	S9030	S913567	S9156	S925975	S938942	S940940	S958924	S958925	T0521	S898436
Caenis macrura																							
Caenis luctuosa																							
Caenis rivulorum																							
Caenis horaria																							
Ephemerella ignita	x	x	x	x			x	x		x	x	x		x		x		x	x	x	x		x
Ephemerella notata																							
Ephemera danica																x						x	
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis																							
Rhithrogena semicolorata	x	x							x		x	x		x					x				
Rhithrogena germanica															x								
Ecdyonurus venosus		x		x							x			x									
Ecdyonurus torrentis																							
Ecdyonurus dispar			x																				x
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus		x		x			x	x		x	x			x				x	x		x		
Baetis rhodani	x	x	x	x	x	x	x	x		x	x	x	x	x		x		x	x	x	x		x
Baetis muticus	x	x	x	x	x		x	x		x	x		x	x		x		x	x	x	x		x
Baetis atrebatinus								x	x	x									x				
Centroptilum luteolum											x	x								x			
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																	x						
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
S817459	12	175	Urrin R. headwaters	1995	Kelly-Quinn (present study)
S839444	12	175	Urrin R. headwaters	1995	Kelly-Quinn (present study)
S865487	12	175	Urrin R. headwaters	1996	Kelly-Quinn (present study)
S854187	13	180	R. Corock	1993	Kelly-Quinn & Bracken (1993)
S858177	13	180	R. Corock	1993	Kelly-Quinn & Bracken (1993)
S860210	13	180	R. Corock	1993	Kelly-Quinn & Bracken (1993)
S871184	13	180	R. Corock	1993	Kelly-Quinn & Bracken (1993)
S934288	13	180	R. Corock	1993	Kelly-Quinn & Bracken (1993)
N4507	14	183	R. Barrow	1996	Kelly-Quinn (present study)
N470100	14	183	R. Barrow	1996	Kelly-Quinn (present study)
N540127	14	183	R. Barrow	1996	Kelly-Quinn (present study)
N540127	14	183	R. Barrow	1936	Harris manuscript
N622109	14	183	R. Barrow	1936-1938	Harris manuscript
N640100	14	183	R. Barrow	1996	Kelly-Quinn (present study)
S695663	14	183	R. Barrow	1996	Kelly-Quinn (present study)
S695665	14	183	R. Barrow	1996	Kelly-Quinn (present study)
S7178	14	183	R. Barrow	1973-77	Whelan (1980a)
N539128	14	183	R. Barrow trib.	1996	Kelly-Quinn (present study)
N591065	14	183	R. Barrow trib.	1994/95	McCaul (unpublished records)
N598066	14	183	R. Barrow trib.	1994/95	McCaul (unpublished records)
N601064	14	183	R. Barrow trib.	1994/95	McCaul (unpublished records)
N609073	14	183	R. Barrow trib.	1994/95	McCaul (unpublished records)
N613068	14	183	R. Barrow trib.	1994/95	McCaul (unpublished records)

NGR	S817459	S839444	S865487	S854187	S858177	S860210	S871184	S934288	N4507	N470100	N540127	N540127	N622109	N640100	S695663	S695665	S7178	N539128	N591065	N598066	N601064	N609073	N613068
Caenis macrura														×									
Caenis luctuosa				×	×	×		×	×	×	×			×		×							
Caenis rivulorum				×	×	×	×																
Caenis horaria																							
Ephemerella ignita	×	×		×	×	×	×	×	×	×	×		×	×	×	×		×					
Ephemerella notata																							
Ephemera danica												×	×				×						
Paraleptophlebia cincta				×	×	×		×						×		×		×					
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea				×	×	×					×		×	×									
Electrogena lateralis																							
Rhithrogena semicolorata	×	×		×	×	×	×	×					×										
Rhithrogena germanica																							
Ecdyonurus venosus		×														×							
Ecdyonurus torrentis																							
Ecdyonurus dispar			×	×	×	×			×	×				×	×			×					
Ecdyonurus insignis				×	×	×	×	×	×		×					×							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus									×		×			×									
Baetis rhodani	×	×	×	×	×		×	×	×	×	×			×					×	×	×	×	×
Baetis muticus	×	×							×	×	×												
Baetis atrebatinus																							
Centroptilum luteolum															×								
Cloeon simile											×												
Cloeon dipterum																							
Procloeon bifidum											×			×									
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N645095	14	183	R. Barrow trib.	1994/95	McCaul (unpublished records)
N649030	14	183	R. Barrow trib.	1994/95	McCaul (unpublished records)
S664232	14	183	R. Barrow trib.	1997	Kelly-Quinn (present study)
S7143	14	183	R. Barrow trib.	1996	Kelly-Quinn (present study)
S6624	14	183	R. Barrow trib.	1997	Kelly-Quinn (present study)
N6000	14	183	R. Barrow (headwaters)	1995	Kelly-Quinn (present study)
S646987	14	183	Boherbawn (trib. Barrow)	1935	Harris manuscript
S804580	14	183	R. Burren	1995	Kelly-Quinn (present study)
N292052	14	183	Conagh R.	1997	Kelly-Quinn (present study)
N5010	14	183	R. Cushina	1947	Harris manuscript
N610266	14	183	Figile R.	1996	Kelly-Quinn (present study)
N531038	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N548041	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N549030	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N550029	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N552040	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N563030	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N567059	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N571054	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N572052	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N575050	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N577046	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N577048	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)

NGR	N645095	N649030	S664232	S7143	S6624	N6000	S646987	S804580	N292052	N5010	N610266	N531038	N548041	N549030	N550029	N552040	N563030	N567059	N571054	N572052	N575050	N577046	N577048
Caenis macrura																							
Caenis luctuosa											×												
Caenis rivulorum												×			×		×			×	×		
Caenis horaria																							
Ephemerella ignita			×	×	×	×		×				×			×					×	×		
Ephemerella notata																							
Ephemera danica						×														×	×	×	
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea																							
Electrogena lateralis																							
Rhithrogena semicolorata															×		×						
Rhithrogena germanica																							
Ecdyonurus venosus								×															
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis					×																		
Baetis vernus									×														
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani	×	×		×		×	×	×				×	×	×	×	×	×	×	×	×	×		×
Baetis muticus						×		×						×						×	×		×
Baetis atrebatinus																							
Centroptilum luteolum						×																	
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum							×			×													
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N586068	14	183	Glasha R. trib.	1994/95	McCaul (unpublished records)
N362075	14	183	Glenbarrow R.	1996	Kelly-Quinn (present study)
N340093	14	183	Glenlahan R.	1988/89/90	Bowman (1991b)
S7080	14	183	Greese R.	1938	Harris manuscript
S745883	14	183	Greese R.	1938/47/48	Harris manuscript
S7993	14	183	Greese R.	1957	Harris manuscript
S800972	14	183	Greese R.	1996	Kelly-Quinn (present study)
S783848	14	183	Lerr R.	1996	Kelly-Quinn (present study)
N483277	14	183	Philipstown R.	1996	Kelly-Quinn (present study)
N6010	14	183	Slate R.	1947	Harris manuscript
S537902	14	183	R. Stradbally	1993	Lucy (unpublished records)/MKQ*
N301004	15	184	Delour R.	1988/89/90	Bowman (1991b)
S280780	15	184	R. Erkina	1989/1996	Byrne (1994), Byrne & Bracken (1995),
					Kelly-Quinn & Bracken (1996,1997,1998 & 1999)
S303775	15	184	R. Erkina	1989/1996	Byrne (1994), Byrne & Bracken (1995),
					Kelly-Quinn & Bracken (1996,1997,1998 & 1999)
S365780	15	184	R. Erkina	1988-1992	Byrne (1994), Byrne & Bracken (1995),
					Kelly-Quinn & Bracken (1996,1997,1998 & 1999)
S410772	15	184	R. Erkina	1988-1992	Byrne (1994), Byrne & Bracken (1995),
					Kelly-Quinn & Bracken (1996,1997,1998 & 1999)
S3070	15	184	R. Erkina	1948	Harris manuscript
S279696	15	184	Foulkscourt Str.	1988-1992	Byrne (1994)
S265726	15	184	R. Glasha	1988-1992	Byrne (1994)

Caenis macrura																			×				
Caenis luctuosa													×		×		×		×				
Caenis rivulorum		×											×		×		×		×				
Caenis horaria																							
Ephemerella ignita		×			×		×	×					×		×		×		×				
Ephemerella notata																					×		
Ephemera danica					×														×				
Paraleptophlebia cincta		×		×	×																		
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea					×								×		×		×		×				
Electrogena lateralis		×									×												
Rhithrogena semicolorata		×	×									×	×		×				×				
Rhithrogena germanica																							
Ecdyonurus venosus		×																	×				
Ecdyonurus torrentis																							
Ecdyonurus dispar								×									×		×				
Ecdyonurus insignis		×			×								×		×								
Baetis vernus		×																					
Baetis fuscatus																							
Baetis scambus		×																					
Baetis rhodani	×	×	×				×	×	×			×	×		×		×		×			×	×
Baetis muticus		×		×	×	×		×					×		×		×		×				
Baetis atrebatinus																							
Centroptilum luteolum																	×						
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum								×		×													
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	N586068	N362075	N340093	S7080	S745883	S7993	S800972	S783848	N483277	N6010	S537902	N301004	S280780		S303775		S365780		S410772		S3070	S279696	S265726

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
S275610	15	184	R. Glasha	1989/1996	Byrne (1994), Byrne & Bracken (1995),
					Kelly-Quinn & Bracken (1996,1997,1998 & 1999)
S2060	15	184	R. Goul	1947	Harris manuscript
S287566	15	184	R. Goul	1988-1992	Byrne (1994)
S288682	15	184	R. Goul	1988-1992	Byrne (1994), Byrne & Bracken (1995),
					Kelly-Quinn & Bracken (1996,1997,1998 & 1999)
S288685	15	184	R. Goul	1995	Lucy (unpublished records)/MKQ*
S306703	15	184	R. Goul	1988-1992	Byrne (1994), Byrne & Bracken (1995),
					Kelly-Quinn & Bracken (1996,1997,1998 & 1999)
S315745	15	184	R. Goul	1988-1992	Byrne (1994), Byrne & Bracken (1995),
					Kelly-Quinn & Bracken (1996,1997,1998 & 1999)
S370767	15	184	R. Goul	1988-1992	Byrne (1994), Byrne & Bracken (1995),
					Kelly-Quinn & Bracken (1996,1997,1998 & 1999)
S370767	15	184	R. Goul	1996	Kelly-Quinn (present study)
S390825	15	184	R. Gully	1995	Lucy (unpublished records)/MKQ*
S405793	15	184	R. Gully	1988-1992	Byrne (1994), MKQ
S3040	15	184	Kings R.	pre-1950	Harris manuscript
S420434	15	184	Kings R.	1996	Kelly-Quinn (present study)
S3090	15	184	Mountrath R.	1996	Kelly-Quinn (present study)
S334988	15	184	Mountrath R.	1988/89/90	Bowman (1991b)
S353946	15	184	Mountrath R.	1996	Kelly-Quinn (present study)
S342921	15	184	R. Nore	1996	Kelly-Quinn (present study)
S3492	15	184	R. Nore	1929	Harris manuscript

Caenis macrura				×												×							
Caenis luctuosa				×	×			×		×		×											
Caenis rivulorum	×				×			×		×		×				×							
Caenis horaria																							
Ephemerella ignita	×			×	×			×		×		×					×	×			×	×	×
Ephemerella notata																							
Ephemera danica				×								×				×							
Paraleptophlebia cincta														×									
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea	×			×				×		×		×				×							
Electrogena lateralis					×													×	×				
Rhithrogena semicolorata	×			×				×		×									×	×			
Rhithrogena germanica																							
Ecdyonurus venosus								×		×		×							×				
Ecdyonurus torrentis																							
Ecdyonurus dispar	×			×			×					×						×			×	×	
Ecdyonurus insignis	×				×							×						×			×	×	
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																						×	
Baetis rhodani	×			×	×			×		×		×				×		×	×	×		×	
Baetis muticus	×				×			×		×		×				×	×					×	
Baetis atrebatinus																							
Centroptilum luteolum					×							×											
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum			×												×								
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	S275610		S2060	S287566	S288682		S288685	S306703		S315745		S370767		S370767	S390825	S405793	S3040	S420434	S3090	S334988	S353946	S342921	S3492

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
S4060	15	184	R. Nore	1928	Harris manuscript
S4070	15	184	R. Nore	1948	Harris manuscript
S4080	15	184	R. Nore	1928	Harris manuscript
S431842	15	184	R. Nore	1996	Kelly-Quinn (present study)
S440716	15	184	R. Nore	1948	Harris Manuscript
S490537	15	184	R. Nore	1996	Kelly-Quinn (present study)
S5040	15	184	R. Nore	1928	Harris manuscript
S5050	15	184	R. Nore	1953	Harris manuscript
S5154	15	184	R. Nore	1973-77	Whelan (1980a)
S637377	15	184	R. Nore	1962	Harris manuscript
R918250	16	-	Muskry L.	1984	Costello, Byrne, Morgan, Fitzgerald (unpublished records)
S297115	16	182	Sgilloge L.	1996	Kelly-Quinn (present study)
R844288	16	182	R. Aherlow	1996	Kelly-Quinn (present study)
S247280	16	182	R. Anner	1996	Kelly-Quinn (present study)
S192578	16	182	Black R.	1991/92	Lynch (1994)
S138 571	16	182	Breagagh R.	1988-1992	Byrne (1994)
S140568	16	182	Breagagh R.	1991/92	Lynch (1994)
S167655	16	182	Brownstown R.	1991/92	Lynch (1994)
R939191	16	182	Burncourt R.	1996	Kelly-Quinn (present study)
S199590	16	182	Clover R.	1991/92	Lynch (1994)
S504100	16	182	R. Dawn	1997	Kelly-Quinn (present study)
S177593	16	182	Drish R.	1991/92	Lynch (1994)
S190619	16	182	Drish R.	1991/92	Lynch (1994)

Caenis macrura																							
Caenis luctuosa															×			×		×		×	×
Caenis rivulorum													×			×	×	×		×	×	×	×
Caenis horaria																							
Ephemerella ignita				×		×							×	×	×	×	×	×		×	×		×
Ephemerella notata		×			×																		
Ephemera danica	×	×	×	×			×	×	×							×							×
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina												×											
Heptagenia fuscogrisea																×	×						×
Heptagenia sulphurea				×		×							×		×		×	×			×	×	×
Electrogena lateralis																							
Rhithrogena semicolorata															×	×	×	×			×		
Rhithrogena germanica								×															
Ecdyonurus venosus													×										
Ecdyonurus torrentis																							
Ecdyonurus dispar						×								×	×	×	×	×		×		×	×
Ecdyonurus insignis				×																	×		
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus				×										×									
Baetis rhodani				×		×					×		×	×	×	×	×	×		×	×	×	×
Baetis muticus				×						×	×			×	×	×	×	×	×	×		×	×
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	S4060	S4070	S4080	S431842	S440716	S490537	S5040	S5050	S5154	S637377	R918250	S297115	R844288	S247280	S192578	S138 571	S140568	S167655	R939191	S199590	S504100	S177593	S190619

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
S190620	16	182	Drish R.	1988-1992	Byrne (1994).
S207634	16	182	Drish R.	1991/92	Lynch (1994)
S217635	16	182	Drish R.	1996	Lucy (unpublished records)/MKQ*
S217635	16	182	Drish R.	1991/92	Lynch (1994)
S265539	16	182	Drish R.	1988-1992	Byrne (1994)
S257275	16	182	Moyle R.	1996	Kelly-Quinn (present study)
S4020	16	182	Trib. Pill R.	1996	Kelly-Quinn (present study)
S237191	16	182	Prison Str.	1996	Kelly-Quinn (present study)
S009393	16	182	R. Suir	1945	Harris manuscript
S013384	16	182	R. Suir	1996	Kelly-Quinn (present study)
S051246	16	182	R. Suir	1996	Kelly-Quinn (present study)
S0751	16	182	R. Suir	1967	Kennedy & Fitzmaurice (1971)
S090540	16	182	R. Suir	1944	Harris manuscript
S120670	16	182	R. Suir	1991/92	Lynch (1994)
S121559	16	182	R. Suir	1991/92	Lynch (1994)
S128581	16	182	R. Suir	1991/92	Lynch (1994)
S134624	16	182	R. Suir	1991/92	Lynch (1994)
S1357	16	182	R. Suir	1973-77	Whelan (1980a & b)
S145206	16	182	R. Suir	1996	Kelly-Quinn (present study)
S649092	16	182	R. Suir trib.	1994/95	McCaul (unpublished records)
R941095	16	182	R. Tar	1991	Giller *et al.* (1997)
S026115	16	182	R. Tar	1991	Giller *et al.* (1997)
S028114	16	182	R. Tar	1996	Kelly-Quinn (present study)

NGR	S190620	S207634	S217635	S217635	S265539	S257275	S4020	S237191	S009393	S013384	S051246	S0751	S090540	S120670	S121559	S128581	S134624	S1357	S145206	S649092	R941095	S026115	S028114
Caenis macrura	×				×																		
Caenis luctuosa	×	×		×										×	×	×	×						
Caenis rivulorum											×			×	×	×	×		×				
Caenis horaria																							
Ephemerella ignita	×	×		×		×	×		×	×	×	×		×	×	×	×		×				×
Ephemerella notata																							
Ephemera danica	×											×			×		×	×					
Paraleptophlebia cincta																							
Leptophlebia marginata																				×			
Leptophlebia vespertina																							
Heptagenia fuscogrisea		×																					
Heptagenia sulphurea		×		×						×	×				×	×	×		×				
Electrogena lateralis																						×	
Rhithrogena semicolorata								×							×				×			×	×
Rhithrogena germanica																							
Ecdyonurus venosus							×															×	×
Ecdyonurus torrentis																							
Ecdyonurus dispar		×		×						×					×	×	×		×			×	
Ecdyonurus insignis							×												×				
Baetis vernus								×				×											
Baetis fuscatus																							
Baetis scambus								×		×	×								×				
Baetis rhodani	×	×		×	×	×	×	×	×	×	×	×		×	×	×	×		×		×	×	×
Baetis muticus	×							×			×		×		×	×	×		×			×	×
Baetis atrebatinus										×													
Centroptilum luteolum		×	×								×						×			×			
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum									×														
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
S079113	16	182	R. Tar	1991	Giller *et al.* (1997)
S149098	16	182	R. Tar	1991	Giller *et al.* (1997)
S224092	17	188	Colligan R.	1991	Giller *et al.* (1997)
S243085	17	188	Colligan R.	1991	Giller *et al.* (1997)
S248038	17	188	Colligan R.	1991	Giller *et al.* (1997)
X225962	17	188	Colligan R.	1997	Kelly-Quinn (present study)
S279022	17	187	Dalligan R.	1991	Giller *et al.* (1997)
S296003	17	187	Dalligan R.	1991	Giller *et al.* (1997)
R005078	18	190	Araglin R.	1991	Giller *et al.* (1997)
R9000	18	190	Araglin R.	1991	Giller *et al.* (1997), Smith (unpublished records)
R964076	18	190	Araglin R.	1991	Giller *et al.* (1997)
R982082	18	190	Araglin R.	1991	Giller *et al.* (1997)
R986074	18	190	Araglin R.	1991	Giller *et al.* (1997)
R989075	18	190	Araglin R.	1991	Giller *et al.* (1997)
R567082	18	190	Awbeg R.	1997	Kelly-Quinn (present study)
R656075	18	190	Awbeg R.	1997	Kelly-Quinn (present study)
R685048	18	190	Awbeg R.	1985/86	Giller & Twomey (1993)
R599191	18	190	Awbeg R. trib.	1991	Giller *et al.* (1997)
R595135	18	190	Bregoge R.	1991	Giller *et al.* (1997)
R607136	18	190	Castlepook R.	1991	Giller *et al.* (1997)
R621135	18	190	Fuckane Str.	1991	Giller *et al.* (1997)
W172958	18	190	R. Blackwater	1966-1968	Toner (1970), Toner & O'Connell (1971)
W292565	18	190	R. Blackwater (Bandon trib.)	1980's	Giller & Cambell (1989)

NGR	S079113	S149098	S224092	S243085	S248038	X225962	S279022	S296003	R005078	R9000	R964076	R982082	R986074	R989075	R567082	R656075	R685048	R599191	R595135	R607136	R621135	W172958	W292565
Caenis macrura																							
Caenis luctuosa																							
Caenis rivulorum		×				×			×	×					×							×	×
Caenis horaria																	×						
Ephemerella ignita					×	×				×	×	×		×	×	×	×					×	×
Ephemerella notata																							
Ephemera danica																×	×						
Paraleptophlebia cincta																	×						
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea															×	×	×					×	×
Electrogena lateralis	×	×	×			×			×	×	×	×											
Rhithrogena semicolorata	×	×	×	×	×	×			×	×	×	×					×			×		×	×
Rhithrogena germanica						×																	
Ecdyonurus venosus	×		×	×	×					×	×	×	×		×	×			×		×	×	×
Ecdyonurus torrentis																							
Ecdyonurus dispar	×		×	×	×						×	×	×			×	×						×
Ecdyonurus insignis						×									×	×							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus										×					×							×	
Baetis rhodani	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Baetis muticus	×	×			×					×	×	×			×	×	×					×	×
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
W292592	18	190	R. Blackwater (Munster)	1997	Lucy (unpublished records)/MKQ*
W3999	18	190	R. Blackwater (Munster)	1972/73	Moriarty (1975)
W443998	18	190	R. Blackwater (Munster)	1997	Kelly-Quinn (present study)
W561975	18	190	R. Blackwater (Munster)	1966-68	Toner (1970), Toner & O'Connell (1971)
W648998	18	190	R. Blackwater (Munster)	1997	Lucy (unpublished records)/MKQ*
W811985	18	190	R. Blackwater (Munster)	1966-68	Toner (1970), Toner & O'Connell (1971)
W8299	18	190	R. Blackwater (Munster)	1943/57/58	Harris manuscript
W8699	18	190	R. Blackwater (Munster)	1972/73	Moriarty (1975)
W8799	18	190	R. Blackwater (Munster)	1972	Moriarty (1973b)
W8999	18	190	R. Blackwater (Munster)	1972/73	Moriarty (1975)
X04988	18	190	R. Blackwater (Munster)	pre 1910	King (1889), King & Halbert (1910)
X055993	18	190	R. Blackwater (Munster)	1997	Kelly-Quinn (present study)
S064057	18	190	R. Blackwater trib.	1991	Giller *et al.* (1997)
S068051	18	190	R. Blackwater trib.	1991	Giller *et al.* (1997)
R253020	18	190	R. Brogeen	1992	Lucy (unpublished records)/MKQ*
R382031	18	190	R. Dalua	1997	Kelly-Quinn (present study)
R822067	18	190	R. Douglas (Kilworth)	1991	Giller *et al.* (1997)
R846051	18	190	R. Douglas (Kilworth)	1991	Giller *et al.* (1997)
R830056	18	190	R. Douglas (Kilworth)	1991	Giller *et al.* (1997)
W902908	18	190	Douglas (Bride) R.	1997	Kelly-Quinn (present study)
X1090	18	190	Finisk R.	1950's	M.Kennedy (unpublished records)
S187039	18	190	Finisk R.	1997	Lucy (unpublished records)/MKQ*
R7000	18	190	R. Funshion	pre-1950	Harris manuscript

Caenis macrura												×											
Caenis luctuosa									×	×		×				×.				×			
Caenis rivulorum			×	×		×						×				×.				×			
Caenis horaria									×	×													
Ephemerella ignita		×	×	×	×	×	×	×		×		×				×.	×	×	×	×			×
Ephemerella notata																							
Ephemera danica							×		×														
Paraleptophlebia cincta																×				×			
Leptophlebia marginata																							
Leptophlebia vespertina																×				×			
Heptagenia fuscogrisea																							
Heptagenia sulphurea			×	×		×		×	×	×	×	×				×		×		×			
Electrogena lateralis													×	×									
Rhithrogena semicolorata				×		×							×	×		×	×	×					
Rhithrogena germanica							×														×		
Ecdyonurus venosus		×		×		×			×	×			×	×		×							
Ecdyonurus torrentis			×													×							
Ecdyonurus dispar			×										×	×		×	×			×			
Ecdyonurus insignis			×						×	×						×.				×			
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus			×	×		×						×				×				×			
Baetis rhodani	×	×	×	×	×	×	×	×				×	×	×		×	×	×	×	×		×	
Baetis muticus			×	×		×	×					×			×	×	×	×	×				
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum												×											
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	W292592	W3999	W443998	W561975	W648998	W811985	W8299	W8699	W8799	W8999	X04988	X055993	S064057	S068051	R253020	R382031	R822067	R846051	R830056	W902908	X1090	S187039	R7000

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
R723108	18	190	R. Funshion	1996	Kelly-Quinn (present study)
R780146	18	190	R. Funshion	1966-68	Toner (1970), Toner & O'Connell (1971)
R859157	18	190	R. Funshion	1997	Lucy (unpublished records)/MKQ*
W410895	18	190	Glen R.	1991	Giller *et al.* (1997)
W459890	18	190	Glen R.	1991	Giller *et al.* (1997)
R877020	18	190	Glenfinish R.	1985/86	Giller *et al.* (1991), Giller & Twomey (1993)
R878021	18	190	Glenfinish R.	1991	Giller *et al.* (1997)
S113012	18	190	Glenshelane	1991	Giller *et al.* (1997)
S128067	18	190	Glenshelane	1991	Giller *et al.* (1997)
S133067	18	190	Glenshelane	1991	Giller *et al.* (1997)
X177839	18	190	Licky R.	1991	Giller *et al.* (1997)
X233875	18	190	Licky R.	1991	Giller *et al.* (1997)
W587848	18	190	R. Martin	1966-68	Toner (1970), Toner & O'Connell (1971)
W611755	18	190	R. Martin	1966-68	Toner (1970), Toner & O'Connell (1971)
S047066	18	190	Owennashad R. trib.	1996	Kelly-Quinn (present study)
W220941	18	190	Owentaraglin R.	1997	Kelly-Quinn (present study)
S050037	18	190	Owinshad R.	1991	Giller *et al.* (1997)
S068052	18	190	Owinshad R.	1991	Giller *et al.* (1997)
W935730	19	192	Aderry L.	1969	Bracken & Murray (1973)
W229682	19	-	Anon L.	1997	Kelly-Quinn (present study)
W384628	19	228	R. Bride	15-Jun-05	Lucy (unpublished records)/MKQ*
W910932	19	228	R. Bride	1996	Kelly-Quinn (present study)
W750827	19	193	Butlerstown R.	1996	Kelly-Quinn (present study)

NGR	R723108	R780146	R859157	W410895	W459890	R877020	R878021	S113012	S128067	S133067	X177839	X233875	W587848	W611755	S047066	W220941	S050037	S068052	W935730	W229682	W384628	W910932	W750827
Caenis macrura																							
Caenis luctuosa																							×
Caenis rivulorum		×					×	×			×			×		×	×						×
Caenis horaria						×																	
Ephemerella ignita	×	×				×							×	×		×						×	×
Ephemerella notata																							
Ephemera danica						×																	
Paraleptophlebia cincta			×																				
Leptophlebia marginata																							
Leptophlebia vespertina																				×			
Heptagenia fuscogrisea																							
Heptagenia sulphurea		×				×							×	×		×					×		
Electrogena lateralis							×		×	×					×			×					
Rhithrogena semicolorata		×				×	×	×	×	×	×	×	×	×			×	×					×
Rhithrogena germanica																							
Ecdyonurus venosus		×		×			×	×				×	×	×		×		×					×
Ecdyonurus torrentis																							
Ecdyonurus dispar	×					×	×	×			×					×		×					
Ecdyonurus insignis	×																						
Baetis vernus															×								
Baetis fuscatus																							
Baetis scambus	×	×											×	×		×							×
Baetis rhodani	×	×		×	×	×	×	×		×	×	×	×	×	×	×	×	×				×	×
Baetis muticus	×	×				×	×	×	×	×	×		×	×	×							×	×
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile																			×				
Cloeon dipterum																			×				
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
W180740	19	228	R. Douglas	1997	Lucy (unpublished records)/MKQ*
W413849	19	228	Dripsey R.	1991	Giller *et al.* (1997)
W432833	19	228	Dripsey R.	1991	Giller *et al.* (1997)
W672817	19	193	Glashaboy R.	1991	Giller *et al.* (1997)
W2967	19	228	R. Lee	1960's	Kennedy & Fitzmaurice (1971)
W3373	19	228	R. Sullane	1960's	Kennedy & Fitzmaurice (1971)
V801265	20	-	Anon L.	1997	Kelly-Quinn (present study)
W155535	20	229	Cullenagh L.	1997	Kelly-Quinn (present study)
W336343	20	-	Kilkeran L.	1996	Kelly-Quinn (present study)
W338344	20	-	Kilkeran L.	1996	Kelly-Quinn (present study)
W341343	20	-	Kilkeran L.	1996	Kelly-Quinn (present study)
W378455	20	232	Argideen R.	1997	Kelly-Quinn (present study)
W5751	20	229	Ballinadee R.	1992/92	O'Neill (1998)/MKQ*
W452573	20	229	Ballymahane R.	1997	Lucy (unpublished records)/MKQ*
W4958	20	229	Ballymahane R.	1992/92	O'Neill (1998)/MKQ*
W378541	20	229	Bandon R.	1997	Kelly-Quinn (present study)
W549569	20	229	Bandon R.	1997	Kelly-Quinn (present study)
W038351	20	236	Bawnaknockane R.	1997	Kelly-Quinn (present study)
W2251	20	229	Brewery R.	1992/92	O'Neill (1998)/MKQ*
W4753	20	229	Bridewell R.	1992/92	O'Neill (1998)/MKQ*
W2458	20	229	Caha R.	1992/92	O'Neill (1998)/MKQ*
W2459	20	229	Caha R.	1992/92	O'Neill (1998)/MKQ*
W2650	20	229	Clubhouse R.	1992/92	O'Neill (1998)/MKQ*

NGR	W180740	W413849	W432833	W672817	W2967	W3373	V801265	W155535	W336343	W338344	W341343	W378455	W5751	W452573	W4958	W378541	W549569	W038351	W2251	W4753	W2458	W2459	W2650
Caenis macrura																							
Caenis luctuosa								×										×					
Caenis rivulorum				×								×			×		×	×	×	×	×	×	×
Caenis horaria																							
Ephemerella ignita			×	×	×	×						×	×	×	×	×	×	×	×	×	×	×	×
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina	×						×	×															
Heptagenia fuscogrisea																							
Heptagenia sulphurea					×	×						×				×	×		×			×	
Electrogena lateralis			×																		×		
Rhithrogena semicolorata		×	×	×								×			×	×		×	×	×			×
Rhithrogena germanica																							
Ecdyonurus venosus			×																				
Ecdyonurus torrentis																							
Ecdyonurus dispar			×	×											×				×	×	×	×	×
Ecdyonurus insignis												×				×		×					
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus												×					×	×					
Baetis rhodani		×	×	×		×						×	×		×			×	×	×	×	×	×
Baetis muticus			×	×	×							×						×					
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile																							
Cloeon dipterum									×	×	×												
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
W235526	20	229	R. Dirty	1994	Lucy (unpublished records)/MKQ*
W6054	20	229	Doon Creek R.	1992/92	O'Neill (1998)/MKQ*
W5952	20	229	Dunderrow str.	1992/92	O'Neill (1998)/MKQ*
V866336	20	b3	Glan Stream	1996	Kelly-Quinn (present study)
W1030	20	233	R. Ilen	1935	Harris manuscript
W115485	20	233	R. Ilen	1991	Giller *et al.* (1997)
W117363	20	233	R. Ilen	1997	Kelly-Quinn (present study)
W145499	20	233	R. Ilen	1991	Giller *et al.* (1997)
W5557	20	229	Inishannon R.	1992/92	O'Neill (1998)/MKQ*
W5553	20	229	Kilmacsimon R.	1992/92	O'Neill (1998)/MKQ*
W065328	20	235	Leamawaddra R.	1997	Kelly-Quinn (present study)
W5554	20	229	Rockhouse R.	1992/92	O'Neill (1998)/MKQ*
V852571	21	-	Anon L.	1997	Kelly-Quinn (present study)
V910553	21	f3	L.Avaul	1969	Bracken & Murray (1973)
V908533	21	f3	L. Avaul Little	1997	Kelly-Quinn (present study)
V570638	21	213	Coomrooanig L.	1984	Costello, Byrne, Morgan, Fitzgerald (unpublished records)
V5060	21	213	L. Currane	1946	Harris Manuscript
R2080	21	220	L. Inchiquin	pre-1950	Harris manuscript
R2080	21	220	L. Inchiquin	1996	Kelly-Quinn (present study)
R2080	21	220	L. Inchiquin	1968	Moriarty (1974)
R2989	21	220	L. Inchiquin	1973-77	Whelan (1980a)
V828614	21	-	L. Naneeslea	1997	Kelly-Quinn (present study)
V8056	21	224	Adrigole R.	1997	Kelly-Quinn (present study)

NGR	W235526	W6054	W5952	V866336	W1030	W115485	W117363	W145499	W5557	W5553	W065328	W5554	V852571	V910553	V908533	V570638	V5060	R2080	R2080	R2080	R2989	V828614	V8056
Caenis macrura																							
Caenis luctuosa															×				×	×			
Caenis rivulorum		×	×	×		×		×	×		×												
Caenis horaria																			×				
Ephemerella ignita		×	×	×		×	×	×	×	×	×								×				
Ephemerella notata																							
Ephemera danica																		×	×		×		
Paraleptophlebia cincta							×				×												
Leptophlebia marginata																							
Leptophlebia vespertina													×	×	×	×		×	×			×	
Heptagenia fuscogrisea																							
Heptagenia sulphurea	×						×				×												
Electrogena lateralis																×	×						
Rhithrogena semicolorata			×			×	×	×	×			×				×							×
Rhithrogena germanica																							
Ecdyonurus venosus																×							
Ecdyonurus torrentis				×																			
Ecdyonurus dispar		×	×			×	×	×	×	×													
Ecdyonurus insignis							×																
Baetis vernus											×												×
Baetis fuscatus																							
Baetis scambus				×			×				×												
Baetis rhodani		×	×	×		×	×	×	×	×	×	×				×			×				
Baetis muticus				×		×	×	×									×						
Baetis atrebatinus					×																		
Centroptilum luteolum																			×				
Cloeon simile														×					×				
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																×							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
V5060	21	213	Cummeragh R.	1964	Harris manuscript
V905718	21	216	Finnihy R.	1996	Kelly-Quinn (present study)
V905720	21	216	Finnihy R.	1996	Kelly-Quinn (present study)
V948422	21	237	Four mile water	1993	Lucy (unpublished records)/MKQ*
V869583	21	219	Glengarriff R.	1991	Giller *et al.* (1997)
V919568	21	219	Glengarriff R.	1991	Giller *et al.* (1997)
V598658	21	213	Isknagahiny Lough Str.	1993	Lucy (unpublished records)/MKQ*
V614757	21	212	R. Inny	1991	Giller *et al.* (1997)
V628769	21	212	R. Inny	1996	Kelly-Quinn (present study)
V581651	21	213	Trib. Isknagahiny L/L.Currane	1991	Giller *et al.* (1997)
V594653	21	213	Trib. Isknagahiny L/L.Currane	1991	Giller *et al.* (1997)
V924548	21	f3	Magannagan Str.	1997	Kelly-Quinn (present study)
W025738	21	217	Roughty R.	1996	Kelly-Quinn (present study)
V752852	22	208	L. Acoose	1996	Kelly-Quinn (present study)
V715900	22	208	L. Caragh	1996	Nolan (1997)/MKQ*
V730929	22	208	L. Caragh	1996	Nolan (1997)/MKQ*
V735924	22	208	L. Caragh	1996	Nolan (1997)/MKQ*
V803830	22	207	Curraghmore L.	1983/84	Costello, Byrne, Morgan, Fitzgerald (unpublished records)
V813847	22	207	Gouragh L.	1983/84	Costello, Byrne, Morgan, Fitzgerald (unpublished records)
W0093	22	207	L. Kilbrean	1969	Bracken & Murray (1973)
V9080	22	207	Killarney	1902	Natural History Museum London
V893817	22	207	Killarney (upper lake)	1971/72	Wise & O'Connor (1997)
V918819	22	207	Killarney (upper lake)	1971/72	Wise & O'Connor (1997)

NGR	V5060	V905718	V905720	V948422	V869583	V919568	V598658	V614757	V628769	V581651	V594653	V924548	W025738	V752852	V715900	V730929	V735924	V803830	V813847	W0093	V9080	V893817	V918819
Caenis macrura																							
Caenis luctuosa															×		×					×	×
Caenis rivulorum					×						×												
Caenis horaria																						×	
Ephemerella ignita			×						×	×	×	×	×						×				
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina														×				×		×		×	
Heptagenia fuscogrisea																							
Heptagenia sulphurea		×														×					×		×
Electrogena lateralis																		×	×				
Rhithrogena semicolorata					×					×	×	×						×	×				
Rhithrogena germanica																							
Ecdyonurus venosus		×							×										×				
Ecdyonurus torrentis																							
Ecdyonurus dispar			×		×		×				×							×					
Ecdyonurus insignis	×	×	×										×										
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus			×						×			×	×										
Baetis rhodani			×	×	×	×		×	×	×	×	×	×					×	×				
Baetis muticus			×		×				×	×			×					×	×				
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile																						×	×
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
V899908	22	207	L. Leane	1971/72	Wise & O'Connor (1997)
V9080	22	207	L. Leane	1946	Harris manuscript
V915916	22	207	L. Leane	1971/72	Wise & O'Connor (1997)
V928908	22	207	L. Leane	1971/72	Wise & O'Connor (1997)
V9386	22	207	L. Leane	pre 1910	King (1889), King & Halbert (1910)
V946900	22	207	L. Leane	1971/72	Wise & O'Connor (1997)
V9489	22	207	L. Leane	1980	Quirke (1986)
V963867	22	207	L. Leane	1971/72	Wise & O'Connor (1997)
V971882	22	207	L. Leane	pre 1910	King (1889), King & Halbert (1910)
V975880	22	207	L. Leane	1971/72	Wise & O'Connor (1997)
V937858	22	207	Muckross L.	1971/72	Wise & O'Connor (1997)
V950859	22	207	Muckross L.	1971/72	Wise & O'Connor (1997)
V965858	22	207	Muckross L.	1971/72	Wise & O'Connor (1997)
V9385	22	207	Muckross L.	pre 1910	King (1889), King & Halbert (1910)
W0382	22	207	Cappagh R.	pre 1910	King (1889), King & Halbert (1910)
V7080	22	208	Caragh R.	1996	Kelly-Quinn (present study)
V7092	22	208	Caragh R.	1996	Nolan (1997)/MKQ*
V710860	22	208	Caragh R.	1974/77	Dowling *et al.* (1981)
V713920	22	208	Caragh R.	1974/77	Dowling *et al.* (1981)
V715820	22	208	Caragh R.	1974/77	Dowling *et al.* (1981)
V720815	22	208	Caragh R.	1974/77	Dowling *et al.* (1981)
V740805	22	208	Caragh R.	1974/77	Dowling *et al.* (1981)
V780815	22	208	Caragh R.	1979	Natural History Museum Dublin (Connolly)

NGR	V899908	V9080	V915916	V928908	V9386	V946900	V9489	V963867	V971882	V975880	V937858	V950859	V965858	V9385	W0382	V7080	V7092	V710860	V713920	V715820	V720815	V740805	V780815
Caenis macrura																							
Caenis luctuosa	×		×	×		×		×		×	×		×				×		×		×	×	
Caenis rivulorum																			×		×	×	
Caenis horaria				×		×	×	×		×			×										
Ephemerella ignita	×		×	×		×		×	×	×	×		×		×			×	×	×	×	×	
Ephemerella notata																							
Ephemera danica	×					×			×				×										
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina								×			×		×										
Heptagenia fuscogrisea																×							
Heptagenia sulphurea	×		×	×						×	×	×	×	×			×					×	
Electrogena lateralis																							
Rhithrogena semicolorata															×	×			×	×	×	×	
Rhithrogena germanica																							
Ecdyonurus venosus																			×	×	×	×	
Ecdyonurus torrentis																					×		
Ecdyonurus dispar																×						×	
Ecdyonurus insignis																×							
Baetis vernus															×								
Baetis fuscatus									×														
Baetis scambus																							
Baetis rhodani																×	×	×	×	×	×	×	×
Baetis muticus																					×	×	
Baetis atrebatinus																							
Centroptilum luteolum	×		×	×	×	×		×	×	×	×		×						×			×	
Cloeon simile	×	×	×	×	×	×		×	×	×	×		×										
Cloeon dipterum						×		×	×				×										
Procloeon bifidum								×													×		
Siphlonurus armatus																							
Siphlonurus lacustris																						×	×
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
V785810	22	208	Caragh R.	1974/77	Dowling *et al.* (1981)
V9080	22	207	Cloghereen R.	1960	Harris manuscript
V975874	22	207	Cloghereen R.	1996	O'Mahony (1997)/MKQ*
V976870	22	207	Cloghereen R.	1996	O'Mahony (1997)/MKQ*
V977869	22	207	Cloghereen R.	1996	O'Mahony (1997)/MKQ*
V977875	22	207	Cloghereen R.	1996	O'Mahony (1997)/MKQ*
V9787	22	207	Cloghereen R.	pre 1910	King (1889), King & Halbert (1910)
V978869	22	207	Cloghereen R.	1996	O'Mahony (1997)/MKQ*
V978870	22	207	Cloghereen R.	1996	O'Mahony (1997)/MKQ*
V979868	22	207	Cloghereen R.	1996	O'Mahony (1997)/MKQ*
V691813	22	208	Coomnacarrig R.	1996	Kelly-Quinn (present study)
V768874	22	207	Cottoner's Str.	1996	Kelly-Quinn (present study)
V9090	22	207	Deenagh R.	pre 1910	King (1889), King & Halbert (1910)
W021946	22	207	Deenagh R.	1993	Lucy (unpublished records)/MKQ*
Q649032	22	t3	R. Emlagh	1996	Lucy (unpublished records)/MKQ*
V5060	22	207	R. Finglas	1946	Harris manuscript
Q698097	22	207	R. Finglas	1996	Lucy (unpublished records)/MKQ*
V9080	22	207	R. Flesk	1946/47	Harris manuscript
V967895	22	207	R. Flesk	1971/72	Wise & O'Connor (1997)
V987904	22	207	R. Flesk	1971/72	Wise & O'Connor (1997)
W036876	22	207	R. Flesk	1971/72	Wise & O'Connor (1997)
W189838	22	207	R. Flesk	1996	Lucy (unpublished records)/MKQ*
W220836	22	207	R. Flesk	1996	Kelly-Quinn (present study)

NGR	V785810	V9080	V975874	V976870	V977869	V977875	V9787	V978869	V978870	V979868	V691813	V768874	V9090	W021946	Q649032	V5060	Q698097	V9080	V967895	V987904	W036876	W189838	W220836
Caenis macrura																							
Caenis luctuosa																							
Caenis rivulorum	×																		×	×	×		
Caenis horaria																							
Ephemerella ignita	×		×	×	×	×	×	×		×	×	×	×						×	×	×		×
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata													×										
Leptophlebia vespertina	×																						
Heptagenia fuscogrisea																							
Heptagenia sulphurea																		×	×	×	×		×
Electrogena lateralis																				×	×		
Rhithrogena semicolorata	×	×											×			×	×	×	×	×	×		
Rhithrogena germanica																							
Ecdyonurus venosus	×												×						×	×	×		
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis												×	×										×
Baetis vernus													×										
Baetis fuscatus													×						×	×	×		
Baetis scambus											×	×											×
Baetis rhodani	×		×	×	×	×		×	×		×	×			×	×		×	×	×	×		×
Baetis muticus	×								×				×			×		×	×	×	×		×
Baetis atrebatinus																							
Centroptilum luteolum													×										
Cloeon simile													×			×							
Cloeon dipterum													×										
Procloeon bifidum	×												×										
Siphlonurus armatus																							
Siphlonurus lacustris	×													×								×	
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
W772856	22	207	R. Flesk (Bride)	1996	Lucy (unpublished records)/MKQ*
W0092	22	207	R. Flesh trib.	pre 1910	King (1889), King & Halbert (1910)
V8296	22	207	R. Laune	1973-77	Whelan (1980a)
V839939	22	207	R. Laune	1993	Lucy (unpublished records)/MKQ*
V881926	22	207	R. Laune	1996	Kelly-Quinn (present study)
V881927	22	207	R. Laune	1971/72	Wise & O'Connor (1997)
V893911	22	207	R. Laune	1971/72	Wise & O'Connor (1997)
V8080	22	207	R. Loe	pre 1910	King (1889), King & Halbert (1910)
V882891	22	207	R. Loe	1996	Kelly-Quinn (present study)
Q9403	22	197	Trib. R. Maine	pre 1910	King (1889), King & Halbert (1910)
Q536019	22	202	Owenalondrig R.	1996	Kelly-Quinn (present study)
V9684	22	207	Owengarriff R.	pre 1910	King (1889), King & Halbert (1910)
V9070	22	207	Owgarriff R.	1968	Harris manuscript
V9981	22	207	Owgarriff R.	pre 1910	King (1889), King & Halbert (1910)
V9080	22	207	Owengarriff R. /Muckross L.	1902	Harris manuscript
H437673	22	207	Owenreagh R.	1996	IRTU, N.I.
V877795	22	207	Owenreagh R.	1996	Lucy (unpublished records)/MKQ*
W096950	22	207	R. Quagmire	1996	Lucy (unpublished records)/MKQ*
V9090	22	207	Woodford R.	1938/47	Harris manuscript
V9090	22	-	n/a	pre 1910	King (1889), King & Halbert (1910)
G7936	23	201	L. Adoon	1993	Cotton (unpublished records)
R171262	23	194	R. Allaghaun	1996	Kelly-Quinn (present study)
R289229	23	194	R. Allaghaun	1996	Kelly-Quinn (present study)

NGR	W772856	W0092	V8296	V839939	V881926	V881927	V893911	V8080	V882891	Q9403	Q536019	V9684	V9070	V9981	V9080	H437673	V877795	W096950	V9090	V9090	G7936	R171262	R289229
Caenis macrura																							
Caenis luctuosa							x														x		
Caenis rivulorum						x	x																
Caenis horaria																							
Ephemerella ignita		x			x	x	x	x	x		x	x		x									
Ephemerella notata																							
Ephemera danica			x				x									x							
Paraleptophlebia cincta									x														
Leptophlebia marginata												x											
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea				x	x	x	x	x				x		x	X								
Electrogena lateralis								x															
Rhithrogena semicolorata						x					x												x
Rhithrogena germanica																							
Ecdyonurus venosus						x					x	x	x		X				x				
Ecdyonurus torrentis																							
Ecdyonurus dispar																						x	
Ecdyonurus insignis												x											
Baetis vernus								x				x		x									
Baetis fuscatus						x	x	x				x											
Baetis scambus					x						x												
Baetis rhodani	x				x	x	x	x	x		x											x	x
Baetis muticus		x				x	x	x	x	x	x	x			X			x	x				
Baetis atrebatinus																							
Centroptilum luteolum							x					x											
Cloeon simile								x						x									
Cloeon dipterum																							
Procloeon bifidum							x	x															
Siphlonurus armatus																				x			
Siphlonurus lacustris								x									x						
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
W173838	23	194	Clydagh R.	1991	Giller *et al.* (1997)
W198840	23	194	Clydagh R.	1991	Giller *et al.* (1997)
R0020	23	194	R. Feale	1938	Harris manuscript
R0030	23	194	R. Feale	1938	Harris manuscript
R1020	23	194	R. Feale	1938	Harris manuscript
Q647114	23	199	Owencashla R.	1996	Kelly-Quinn (present study)
Q5000	23	203	Owenmore R.	1957	Harris manuscript
R6040	24	155d	L. Gur	1996	Kelly-Quinn (present study)
R647413	24	155d	L. Gur	1996	Kelly-Quinn (present study)
R277336	24	155	R. Arra (trib. Deel)	1996	Kelly-Quinn (present study)
R331220	24	155	Broadford R.	1996	Kelly-Quinn (present study)
R5030	24	155	Camoge R.	1948	Harris manuscript
R5441	24	155	Camoge R.	1960's	Kennedy & Fitzmaurice (1971)
N240684	24	155	Camogue R.	1997	Kelly-Quinn (present study)
R423438	24	155	Clonshire R.	1996	Kelly-Quinn (present study)
R361413	24	155	R. Deel	1996	Kelly-Quinn (present study)
R611277	24	155	Loobagh R.	1996	Kelly-Quinn (present study)
R4050	24	155	R. Maigue	1945	Harris manuscript
R468466	24	155	R. Maigue	1996	Kelly-Quinn (present study)
R469466	24	155	R. Maigue	1944	Harris manuscript
R4745	24	155	R. Maigue	1973-77	Whelan (1980a)
R525395	24	155	R. Maigue	1996	Kelly-Quinn (present study)
R514410	24	155	R. Maigue	1945/48	Harris manuscript

Caenis macrura															×				×				
Caenis luctuosa									×	×						×			×				
Caenis rivulorum	×	×															×						
Caenis horaria																							
Ephemerella ignita						×				×	×	×			×	×	×	×	×			×	×
Ephemerella notata																							
Ephemera danica																					×		
Paraleptophlebia cincta											×												
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea							×																
Electrogena lateralis	×																						
Rhithrogena semicolorata	×	×	×	×	×																		
Rhithrogena germanica																							
Ecdyonurus venosus	×	×				×				×								×					
Ecdyonurus torrentis																							
Ecdyonurus dispar	×													×									
Ecdyonurus insignis											×						×						
Baetis vernus																							×
Baetis fuscatus																							
Baetis scambus						×				×		×				×	×					×	×
Baetis rhodani	×	×	×	×	×	×				×			×	×	×	×	×					×	
Baetis muticus	×	×				×				×		×				×	×			×		×	×
Baetis atrebatinus												×											×
Centroptilum luteolum												×							×				×
Cloeon simile								×											×				
Cloeon dipterum																							
Procloeon bifidum												×											×
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	W173838	W198840	R0020	R0030	R1020	Q647114	Q5000	R6040	R647413	R277336	R331220	R5030	R5441	N240684	R423438	R361413	R611277	R4050	R468466	R469466	R4745	R525395	R514410

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
R5635	24	155	Morning Star R.	1960's	Kennedy & Fitzmaurice (1971)
R613990	25	-	L. Aniddaun	1997	Kelly-Quinn (present study)
N1010	25	155b	Boora L.	1995	Trodd (1996)/MKQ*
N178195	25	155	Boora L.	1996	O'Connor/Kelly-Quinn
N182195	25	155b	Boora L.	1996	O'Connor/MKQ
N182195	25	155b	Boora L.	1997	O'Connor/MKQ
M8000	25	155b	L. Derg	1918-1932	Southern (1935)
R6070	25	155b	L. Derg	1994	Hogan (1995)
R690785	25	155b	L. Derg	1976	Natural History Museum Dublin
R7080	25	155b	L. Derg	pre-1950	Harris manuscript
R7080	25	155b	L. Derg	1994	Hogan (1995)
R7080	25	155b	L. Derg	1918-1932	Southern (1935)
R7090	25	155b	L. Derg	pre-1950	Harris manuscript
R7186	25	155b	L. Derg	1947	Harris manuscript
R7993	25	155b	L. Derg	1975	Toner & Clabby (1975)
R8090	25	155b	L. Derg	1945	Harris manuscript
R8090	25	155b	L. Derg	1972/75	Toner *et al.* (1973), Toner & Clabby (1975)
R8090	25	155b	L. Derg	1969	Moriarty (1973b & 1974)
N4060	25	155b	L. Derravaragh	1960's	Kennedy & Fitzmaurice (1971)
N3040	25	155b	L. Ennell	1997	Kelly-Quinn (present study)
N375443	25	155b	L. Ennell	1958	Harris manuscript
N377441	25	155b	L. Ennell	1996	Kelly-Quinn (present study)
N4040	25	155b	L. Ennell	1981	Forde (1985)

Caenis macrura																							
Caenis luctuosa				×	×	×											×			×		×	×
Caenis rivulorum																							
Caenis horaria					×	×												×		×			×
Ephemerella ignita															×		×	×				×	
Ephemerella notata																							
Ephemera danica	×		×				×	×	×	×	×	×	×	×	×	×	×	×	×				×
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina		×																					
Heptagenia fuscogrisea																							
Heptagenia sulphurea	×													×			×						
Electrogena lateralis																							
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis																							
Baetis vernus	×																						
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani	×																						
Baetis muticus																		×					
Baetis atrebatinus																							
Centroptilum luteolum																	×				×		×
Cloeon simile			×	×	×	×																×	×
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	R5635	R613990	N1010	N178195	N182195	N182195	M8000	R6070	R690785	R7080	R7080	R7080	R7090	R7186	R7993	R8090	R8090	R8090	N4060	N3040	N375443	N377441	N4040

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N4040	25	155b	L. Ennell	1935/53	Harris manuscript
N4040	25	155b	L. Ennell	1960's	Kennedy & Fitzmaurice (1971)
N416465	25	155b	L. Ennel	1996	Kelly-Quinn (present study)
M7090	25	155a	L. Gara	1945	Harris manuscript
R5090	25	155b	L. Graney	1996/97	Kelly-Quinn (present study)
N2010	25	155b	Pallas L.	1959	Harris manuscript
N2819	25	155b	Pallas L.	1973-77	Whelan (1980a & b)
N1823	25	-	L. Turraun	1997	O'Connor/Kelly-Quinn
R682487	25	155	Anon trib. R. Shannon	1996	Kelly-Quinn (present study)
R967881	25	155	Ballyfinboy R.	1996	Kelly-Quinn (present study)
N0020	25	155	R. Blackwater	1920's	M.Kennedy (unpublished records)
N1020	25	155	R. Brosna	1947	Harris manuscript
N1925	25	155	R. Brosna	1947	Harris manuscript
N2030	25	155	R. Brosna	1947	Harris manuscript
N212306	25	155	R. Brosna	1947	Harris manuscript
N340350	25	155	R. Brosna	1947	Harris manuscript
N380417	25	155	R. Brosna	1996	Kelly-Quinn (present study)
N3843	25	155b	R. Brosna	1935	Harris manuscript
N070053	25	155	Camcor R. Birr	1997	Kelly-Quinn (present study)
M732038	25	155	Cappagh Str.	1991-93	Igoe (1999)
M760042	25	155	Cappagh Str.	1991-93	Igoe (1999)
N295098	25	155	Clodiagh R.	1988/89/90	Bowman (1991b)
N310229	25	155	Clodiagh R.	1996	Kelly-Quinn (present study)

Caenis macrura																							
Caenis luctuosa			×		×			×									×			×	×		
Caenis rivulorum																			×	×	×		
Caenis horaria						×		×															
Ephemerella ignita									×	×					×		×		×	×	×		×
Ephemerella notata																							
Ephemera danica	×	×					×										×				×		×
Paraleptophlebia cincta										×													
Leptophlebia marginata																							
Leptophlebia vespertina																			×				
Heptagenia fuscogrisea	×			×																			
Heptagenia sulphurea				×	×					×		×							×				
Electrogena lateralis																							
Rhithrogena semicolorata										×										×	×	×	
Rhithrogena germanica											×												
Ecdyonurus venosus										×													×
Ecdyonurus torrentis																							
Ecdyonurus dispar													×							×	×		×
Ecdyonurus insignis										×													×
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							×
Baetis rhodani										×					×		×	×		×	×	×	×
Baetis muticus												×		×		×	×		×				×
Baetis atrebatinus																							
Centroptilum luteolum					×																		
Cloeon simile			×					×															
Cloeon dipterum																							
Procloeon bifidum													×										
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus						×																	
Ameletus inopinatus																							
NGR	N4040	N4040	N416465	M7090	R5090	N2010	N2819	N1823	R682487	R967881	N0020	N1020	N1925	N2030	N212306	N340350	N380417	N3843	N070053	M732038	M760042	N295098	N310229

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N3210	25	155	Clodiagh R.	1973-77	Whelan (1980a)
R780649	25	155	Doonane Str.	1991-93	Igoe (1999)
R782648	25	155	Doonane Str.	1991-93	Igoe (1999)
N358475	25	155b	Ennell L. trib.	1996	Kelly-Quinn (present study)
N323108	25	155	Gorragh R. trib.	1996	Kelly-Quinn (present study)
R680675	25	155	Kilmastulla R.	1988	Phillips (1987, 1993)
R710693	25	155	Kilmastulla R.	1988	Phillips (1987, 1993)
R711691	25	155	Kilmastulla R.	1988	Phillips (1987, 1993)
R726697	25	155	Kilmastulla R.	1988	Phillips (1987, 1993)
R746706	25	155	Kilmastulla R.	1988	Phillips (1987, 1993)
R755710	25	155	Kilmastulla R.	1988	Phillips (1987, 1993)
R780731	25	155	Kilmastulla R.	1996	Kelly-Quinn (present study)
R786718	25	155	Kilmastulla R.	1988	Phillips (1987, 1993)
R813713	25	155	Kilmastulla R.	1988	Phillips (1987, 1993)
M9010	25	155	Little Brosna R.	1972	Toner *et al.* (1973)
N0000	25	155	Little Brosna R.	1996	Kelly-Quinn (present study)
S1092	25	155	Little Brosna R.	1960's	Kennedy & Fitzmaurice (1971)
S1389	25	155	Little Brosna R.	1973-77	Whelan (1980a)
R642577	25	155	Mulkear R.	1996	Kelly-Quinn (present study)
R6457	25	155	Mulkear R.	1960's	Kennedy & Fitzmaurice (1971)
R8080	25	155	Nenagh R.	1935	Harris manuscript
R831849	25	155	Nenagh R.	1935	Harris manuscript
R868812	25	155	Nenagh R.	1996	Kelly-Quinn (present study)

Caenis macrura																							
Caenis luctuosa		×	×			×		×		×	×		×	×									
Caenis rivulorum		×	×			×	×	×	×	×	×		×	×									
Caenis horaria																							
Ephemerella ignita		×	×	×	×	×	×	×	×	×	×	×	×	×	×	×			×				×
Ephemerella notata																							
Ephemera danica	×					×								×		×	×	×					
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea																							
Heptagenia sulphurea				×															×				
Electrogena lateralis																							
Rhithrogena semicolorata		×	×								×			×									
Rhithrogena germanica																							
Ecdyonurus venosus					×			×	×		×			×					×				
Ecdyonurus torrentis																							×
Ecdyonurus dispar		×	×	×	×																		
Ecdyonurus insignis																			×				×
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus						×	×	×	×	×	×		×	×									
Baetis rhodani		×	×	×	×	×	×	×	×	×	×	×	×	×		×			×	×			×
Baetis muticus				×	×	×					×	×		×			×				×		×
Baetis atrebatinus																							
Centroptilum luteolum						×	×	×	×														
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																						×	
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	N3210	R780649	R782648	N358475	N323108	R680675	R710693	R711691	R726697	R746706	R755710	R780731	R786718	R813713	M9010	N0000	S1092	S1389	R642577	R6457	R8080	R831849	R868812

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
R875828	25	155	Ollatrim R.	1996	Kelly-Quinn (present study)
N0030	26	155	R. Shannon	1980's	Carter (unpublished records)
N0040	25	155	R. Shannon	1958	Natural History Museum London (Ward)
N0040	25	155	R. Shannon	pre 1910	King (1889), King & Halbert (1910)
N008307	25	155b	R. Shannon	1997	Kelly-Quinn (present study)
N0096	26	155a	R. Shannon	1995	Cotton (unpublished records)
N041414	25	155	R. Shannon	pre 1910	King (1889), King & Halbert (1910)
N043414	25	155	R. Shannon	1997	Kelly-Quinn (present study)
N0442	25	155	R. Shannon	1981	Natural History Museum Dublin (Carter/JOC)
R5957	25	155	R. Shannon	1973-77	Whelan (1980a & b)
R6060	25	155	R. Shannon	1969	Moriarty (1974)
M8000	25	155b	Lower Shannon	1972	Toner *et al.* (1973)
M9010	25	155b	Lower Shannon	1972	Toner *et al.* (1973)
M9020	25	155b	Lower Shannon	1972	Toner *et al.* (1973)
N0030	25	155b	Lower Shannon	1972	Toner *et al.* (1973)
N1020	25	155	Silver R.	1947	Harris manuscript
N180150	25	155	Silver R.	1997	Kelly-Quinn (present study)
N1813	25	155	Silver R.	1973-77	Whelan (1980a & b)
N337282	25	155	Silver R.	1947	Harris manuscript
N3423	25	155	Tullamore R.	1973-77	Whelan (1980a & b)
G9010	26	155a	L. Allen	1951	Macan & Lund (1954)
G9711	26	155a	L. Allen	1973-77	Whelan (1980a)
H051242	26	-	Anon L.	1997	Kelly-Quinn (present study)

Caenis macrura																							
Caenis luctuosa					×							×	×	×	×								
Caenis rivulorum					×																		
Caenis horaria				×	×																		
Ephemerella ignita	×	×		×					×			×	×	×	×	×	×						
Ephemerella notata																							
Ephemera danica						×	×	×		×		×	×	×	×			×		×		×	
Paraleptophlebia cincta				×																			
Leptophlebia marginata																							
Leptophlebia vespertina																							×
Heptagenia fuscogrisea					×																		
Heptagenia sulphurea				×								×	×	×	×		×				×		
Electrogena lateralis																							
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus	×																×						
Ecdyonurus torrentis	×																						
Ecdyonurus dispar																	×						
Ecdyonurus insignis																	×						
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																	×						
Baetis rhodani			×				×										×						
Baetis muticus											×						×		×				
Baetis atrebatinus																							
Centroptilum luteolum				×	×																		
Cloeon simile				×																			
Cloeon dipterum					×																		
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris							×																
Siphlonurus alternatus			×																				
Ameletus inopinatus																							
NGR	R875828	N0030	N0040	N0040	N008307	N0096	N041414	N043414	N0442	R5957	R6060	M8000	M9010	M9020	N0030	N1020	N180150	N1813	N337282	N3423	G9010	G9711	H051242

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N096460	26	-	Lake anon	pre 1910	King (1889), King & Halbert (1910)
N004976	26	-	Lough anon south L.Erril	1996	Kelly-Quinn (present study)
N4060	26	-	Anon (pond)	1939	Harris manuscript
M785587	26	156	Ballydacken L.	1997	Kelly-Quinn (present study)
N554710	26	157	L. Bane	1996	Kelly-Quinn (present study)
M8090	26	155	Cavetown L.	194646	Harris manuscript
M8090	26	155	Cavetown L.	1973-77	Whelan (1980a)
M5080	26	155a	L. Cloona	1973-77	Whelan (1980a)
M5080	26	155a	L. Cloonacolly	1973-77	Whelan (1980a)
N055445	26	155	Coosan L.	1977	O'Connor & Norton (1977, 1978)
N0645	26	155	Coosan L.	1976	Natural History Musuem Dublin
M5070	26	-	Croaghill Turlough	1996	Reynolds (unpublished records)/MKQ*
M8000	26	155a	L. Derg	1972,75	Toner *et al.* (1973), Toner & Clabby (1975)
N4060	26	157	L. Derravaragh	1935/41	Harris manuscript
N4060	26	157	L. Derravaragh	1975	Whelan (1980a & b)
N460634	26	157	L. Derravaragh	1996	Kelly-Quinn (present study)
M945495	26	155a	L. Funshinagh	1996	Kelly-Quinn (present study)
G6900	26	155a	L. Gara	1989	Cotton (unpublished records)
M7000	26	155a	L. Gara (North)	1996/97	Kelly-Quinn (present study)
M7298	26	155a	L. Gara	1997	Kelly-Quinn (present study)
M7298	26	155a	L. Gara	1996/97	Kelly-Quinn (present study)
M7298	26	155a	L. Gara (South)	1996/97	Kelly-Quinn (present study)
N4070	26	157	L. Glore	1945	Harris manuscript

NGR	N096460	N004976	N4060	M785587	N554710	M8090	M8090	M5080	M5080	N055445	N0645	M5070	M8000	N4060	N4060	N460634	M945495	G6900	M7000	M7298	M7298	M7298	N4070
Caenis macrura																							
Caenis luctuosa				×	×								×			×	×		×	×	×	×	
Caenis rivulorum										×													
Caenis horaria				×												×	×		×		×	×	
Ephemerella ignita										×			×			×			×	×	×		
Ephemerella notata																							
Ephemera danica							×	×	×	×			×		×	×		×	×	×			
Paraleptophlebia cincta																							
Leptophlebia marginata																						×	
Leptophlebia vespertina		×																					
Heptagenia fuscogrisea														×									
Heptagenia sulphurea	×									×			×	×		×							
Electrogena lateralis																							
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani																×							
Baetis muticus																							
Baetis atrebatinus																							
Centroptilum luteolum				×		×							×			×			×	×			×
Cloeon simile	×			×		×						×					×					×	
Cloeon dipterum			×	×	×											×							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus										×	×												
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N0818	26	155a	Gorteen L.	pre 1910	King (1889), King & Halbert (1910)
G8000	26	155a	L. Key	1972	Toner *et al.* (1973)
G8000	26	155a	L. Key	1970	Moriarty (1973b &1974)
G8302	26	155a	L. Key	1997	Kelly-Quinn (present study)
N3080	26	157	L. Kinale	1973-77	Whelan (1980a)
M5080	26	155a	L. Nanoge	1973-77	Whelan (1980a)
M5977	26	156	L. O'Flynn	1973-77	Whelan (1980a)
N4050	26	157	L. Owel	1996	Kelly-Quinn (present study)
N427634	26	157	L. Patrick	1996	Kelly-Quinn (present study)
N0050	26	155	L. Ree	pre-1950	Harris manuscript
N0050	26	155a	L. Ree	1963	M.Kennedy (unpublished records)
N0050	26	155a	L. Ree	1972	Toner *et al.* (1973)
N009467	26	155a	L. Ree	1997	Kelly-Quinn (present study)
N010462	26	155a	L. Ree	1996	Kelly-Quinn (present study)
N017486	26	155a	L. Ree	pre 1910	King (1889), King & Halbert (1910)
N047462	26	155a	L. Ree	pre 1910	King (1889), King & Halbert (1910)
N0050	26	157	L. Ree (Yellow Isl.)	1958	Natural History Museum London (Ward)
N0547	26	155a	L. Ree	1976	Natural History Musuem Dublin
N073455	26	155a	L. Ree	pre 1910	King (1889), King & Halbert (1910)
N080467	26	155a	L. Ree	pre 1910	King (1889), King & Halbert (1910)
M987693	26	155a	L. Ree	1996	Kelly-Quinn (present study)
N045471	26	155a	L. Ree	pre 1910	King (1889), King & Halbert (1910)
N048461	26	155a	L. Ree	1978	O'Connor & Norton (1977, 1978)

NGR	N0818	G8000	G8000	G8302	N3080	M5080	M5977	N4050	N427634	N0050	N0050	N0050	N009467	N010462	N017486	N047462	N0050	N0547	N073455	N080467	M987693	N045471	N048461
Caenis macrura														×		×			×		×		
Caenis luctuosa		×		×				×	×			×	×	×							×		
Caenis rivulorum																							×
Caenis horaria			×	×					×				×	×		×			×				
Ephemerella ignita		×	×					×				×			×	×	×	×		×		×	×
Ephemerella notata																							
Ephemera danica		×	×	×	×	×	×			×		×		×							×		×
Paraleptophlebia cincta																			×				
Leptophlebia marginata																							
Leptophlebia vespertina				×																			
Heptagenia fuscogrisea				×																	×		
Heptagenia sulphurea	×	×													×	×			×				×
Electrogena lateralis																							
Rhithrogena semicolorata																							
Rhithrogena germanica											×												
Ecdyonurus venosus															×	×						×	
Ecdyonurus torrentis																							
Ecdyonurus dispar		×										×											
Ecdyonurus insignis	×																						
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani																							
Baetis muticus																			×				
Baetis atrebatinus																							
Centroptilum luteolum	×			×								×	×	×	×	×	×			×			
Cloeon simile								×								×			×				
Cloeon dipterum									×														
Procloeon bifidum																×							
Siphlonurus armatus																							
Siphlonurus lacustris															×	×							
Siphlonurus alternatus														×									×
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
N073443	26	155a	L.Ree/Breensford R.	pre 1910	King (1889), King & Halbert (1910)
M4889	26	155a	L. Roe	1973-77	Whelan (1980a)
N4080	26	157	L. Sheelin	1931/32/39/46/47/48/56	Harris manuscript
N4080	26	157	L. Sheelin	1960's	Kennedy & Fitzmaurice (1971)
N4080	26	157	L. Sheelin	1950's	Macan (1955, 1958a&b)
N4080	26	157	L. Sheelin	1960's	Natural History Museum Dublin
N4080	26	157	L. Sheelin	1973-77	Whelan (1980a & b)
N4385	26	157	L. Sheelin	1951	Macan & Lund (1954)
N4080	26	157	L.Sheelin feeder stream	1947	Harris manuscript
H116897	26	157	L.Shinnagh	1997	Kelly-Quinn (present study)
N103437	26	-	Twy L.	pre 1910	King (1889), King & Halbert (1910)
M5080	26	155a	L. UrlaUr	1973-77	Whelan (1980a)
M8030	26	156	Ahascragh R.	pre-1950	Harris manuscript
N468620	26	157	Anon (inflow to L. Derravaragh)	1996	Kelly-Quinn (present study)
N080467	26	-	Anon R.	pre 1910	King (1889), King & Halbert (1910)
N374698	26	155	Black R.	1996	Kelly-Quinn (present study)
N106353	26	155	R. Boor	1997	Kelly-Quinn (present study)
G792020	26	155	Boyle R.	1997	Kelly-Quinn (present study)
G8000	26	155	Boyle R.	1945	Harris manuscript
G8002	26	155	Boyle R.	1973-77	Whelan (1980a)
N105453	26	155	Breensford R.	pre 1910	King (1889), King & Halbert (1910)
N1374	26	155	Camlin R.	1973-77	Whelan (1980a)
N068694	26	155	R. Fallan	1997	Kelly-Quinn (present study)

NGR	N073443	M4889	N4080	N4080	N4080	N4080	N4080	N4385	N4080	H116897	N103437	M5080	M8030	N468620	N080467	N374698	N106353	G792020	G8000	G8002	N105453	N1374	N068694
Caenis macrura							×																
Caenis luctuosa			×		×																		
Caenis rivulorum																		×					
Caenis horaria					×																		
Ephemerella ignita													×	×		×		×			×		×
Ephemerella notata																							
Ephemera danica		×		×	×		×					×								×		×	
Paraleptophlebia cincta									×						×						×		
Leptophlebia marginata											×												
Leptophlebia vespertina			×				×			×													
Heptagenia fuscogrisea			×		×		×		×														
Heptagenia sulphurea	×		×		×		×											×	×				
Electrogena lateralis							×																
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis															×								
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani							×							×			×	×	×				×
Baetis muticus															×		×	×	×				
Baetis atrebatinus																							
Centroptilum luteolum			×				×	×													×		
Cloeon simile						×	×	×															
Cloeon dipterum																×							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus			×				×	×															
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
G8713	26	155	R. Feorish (Ballyfarnon)	1996	Kelly-Quinn (present study)
M6880	26	156	R. Francis	1960's	Kennedy & Fitzmaurice (1971)
N4070	26	157	Glore R.	1952	Harris manuscript
N501715	26	157	Glore R.	1996	Kelly-Quinn (present study)
N5270	26	157	Glore R.	1973-77	Whelan (1980a)
M8050	26	155	R. Hind	1993	Garry (1995)
M8060	26	155	R. Hind	1993	Garry (1995)
M9060	26	155	R. Hind	1993	Garry (1995)
M9162	26	155	R. Hind	1973-77	Whelan (1980a)
N1050	26	157	Inny R.	1935/46	Harris manuscript
N1555	26	157	Inny R.	1973-77	Whelan (1980a)
N227594	26	157	Inny R.	1946	Harris manuscript
N3060	26	157	Inny R.	1946	Harris manuscript
N4080	26	157	Inny R.	1960's	Kennedy & Fitzmaurice (1971)
N4080	26	157	Inny R.	1950's	M.Kennedy (unpublished records)
N4783	26	157	Inny R.	1935	Harris manuscript
N3070	26	157	Inny R.	1935/46	Harris manuscript
N390725	26	157	Inny R.	1996	Kelly-Quinn (present study)
N5579	26	157	Inny R.	1946	Harris manuscript
N381723	26	157	Inny R. Trib.	1996	Kelly-Quinn (present study)
M663730	26	156	Island R.	1996	Kelly-Quinn (present study)
M6971	26	156	Island R.	1973-77	Whelan (1980a)
M787494	26	156	Killian R.	1997	Kelly-Quinn (present study)

Caenis macrura																							
Caenis luctuosa																		×					×
Caenis rivulorum																		×			×		
Caenis horaria																							
Ephemerella ignita		×	×	×		×	×	×						×			×	×		×	×		×
Ephemerella notata																							
Ephemera danica					×				×		×			×							×	×	×
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina						×		×															
Heptagenia fuscogrisea							×	×						×									
Heptagenia sulphurea														×		×	×	×			×		×
Electrogena lateralis																							
Rhithrogena semicolorata																				×	×		
Rhithrogena germanica																							
Ecdyonurus venosus				×																×			
Ecdyonurus torrentis																							×
Ecdyonurus dispar	×																				×		×
Ecdyonurus insignis																					×		×
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus				×																	×		×
Baetis rhodani			×	×		×	×	×		×		×		×				×	×	×	×		×
Baetis muticus				×						×			×					×		×	×		×
Baetis atrebatinus										×													
Centroptilum luteolum			×							×				×				×			×		×
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum														×	×								
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	G8713	M6880	N4070	N501715	N5270	M8050	M8060	M9060	M9162	N1050	N1555	N227594	N3060	N4080	N4080	N4783	N3070	N390725	N5579	N381723	M663730	M6971	M787494

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
M6090	26	158	Lung R.	1931/34/35	Harris manuscript
M6295	26	158	Lung R.	1973-77	Whelan (1980a)
M651929	26	158	Lung R.	1996	Kelly-Quinn (present study)
M9080	26	155	Owenur R.	1996	Kelly-Quinn (present study)
N332687	26	157	R. Riffey	1996	Kelly-Quinn (present study)
G9000	26	155	R. Shannon	pre-1950	Harris manuscript
M9000	26	155	R. Shannon	pre-1950	Harris manuscript
M9020	26	155	R. Shannon	pre-1950	Harris manuscript
M9050	26	155	R. Shannon	pre-1950	Harris manuscript
M9060	26	155	R. Shannon	pre-1950	Harris manuscript
M938141	26	155	R. Shannon	1997	Kelly-Quinn (present study)
M9413	26	155	R. Shannon	1918-1932	Southern (1935)
M968257	26	155	R. Shannon	1997	Kelly-Quinn (present study)
N0030	26	155	R. Shannon	pre-1950	Harris manuscript
N0040	26	155	R. Shannon	pre-1950	Harris manuscript
N0070	26	155	R. Shannon	pre-1950	Harris manuscript
N0080	26	155	R. Shannon	pre-1950	Harris manuscript
N0090	26	155	R. Shannon	pre-1950	Harris manuscript
N011693	26	155a	R. Shannon	1996	Kelly-Quinn (present study)
N0010	26	155	R. Shannon	pre-1950	Harris manuscript
M6847	26	156	Shiven R.	1973-77	Whelan (1980a & b)
M789649	26	156	R. Suck	1997	Kelly-Quinn (present study)
M8020	26	156	R. Suck	1977-79	Anon (1977-1979)

NGR	M6090	M6295	M651929	M9080	N332687	G9000	M9000	M9020	M9050	M9060	M938141	M9413	M968257	N0030	N0040	N0070	N0080	N0090	N011693	N0010	M6847	M789649	M8020
Caenis macrura																							
Caenis luctuosa					×						×		×						×			×	×
Caenis rivulorum			×										×									×	
Caenis horaria																							
Ephemerella ignita					×						×								×			×	
Ephemerella notata																							
Ephemera danica	×	×	×			×	×	×	×	×		×		×	×	×	×	×		×	×	×	
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea	×										×												
Heptagenia sulphurea	×		×	×																			×
Electrogena lateralis			×																				
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus			×		×																		
Ecdyonurus torrentis																							
Ecdyonurus dispar	×				×																		
Ecdyonurus insignis			×		×																		
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus			×		×																	×	
Baetis rhodani			×	×	×														×			×	×
Baetis muticus	×		×	×	×																	×	
Baetis atrebatinus																						×	
Centroptilum luteolum	×										×											×	
Cloeon simile													×										
Cloeon dipterum													×										
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							×
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
M8040	26	156	R. Suck	1977-79	Anon (1977-1979)
M8050	26	156	R. Suck	1977-79	Anon (1977-1979)
M812530	26	156	R. Suck	1997	Kelly-Quinn (present study)
M818464	26	155	R. Suck	1996	Kelly-Quinn (present study)
M8431	26	156	R. Suck	1973-77	Whelan (1980a & b)
M857310	26	156	R. Suck	pre-1950	Harris manuscript
M911256	26	156	R. Suck	1997	Kelly-Quinn (present study)
N009400	26	155a	R. Shannon Trib.	pre 1910	King (1889), King & Halbert (1910)
G9000	26	155a	Upper Shannon	1972	Toner *et al.* (1973)
M9090	26	155a	Upper Shannon	1972	Toner *et al.* (1973)
N0070	26	155a	Upper Shannon	1972	Toner *et al.* (1973)
N0080	26	155a	Upper Shannon	1972	Toner *et al.* (1973)
N0040	26	-	n/a	pre 1910	King (1889), King & Halbert (1910)
R2080	27	158	Ballycullinan L.	1996	Kelly-Quinn (present study)
R3090	27	158	L. Bunny	1996/97	Kelly-Quinn (present study)
R2899	27	-	Carron L.(Turlough)	1981	Natural History Museum Dublin (Walsh)
M0387	27	158	Clogher L.	1997	Boisson (1997)
R3190	27	158	Cullaun L.	1996/97	Kelly-Quinn (present study)
R3486	27	158	L. Dromore	1996/97	Kelly-Quinn (present study)
R3080	27	158	Lakes in Fergus R catch.	pre-1950	Harris manuscript
R4060	27	158	Fin L.	1968	Moriarty (1974)
R376955	27	-	Turlough E. of L. Bunny	1996	Kelly-Quinn (present study)
R362862	27	158	Anon (small channel)	1996	Kelly-Quinn (present study)

NGR	M8040	M8050	M812530	M818464	M8431	M857310	M911256	N009400	G9000	M9090	N0070	N0080	N0040	R2080	R3090	R2899	M0387	R3190	R3486	R3080	R4060	R376955	R362862
Caenis macrura																							
Caenis luctuosa	×	×	×				×		×	×	×	×			×		×	×	×		×		×
Caenis rivulorum			×											×									
Caenis horaria														×					×				
Ephemerella ignita	×		×	×		×		×	×	×	×	×			×								
Ephemerella notata																							
Ephemera danica	×		×	×	×				×	×	×	×	×							×			
Paraleptophlebia cincta								×															
Leptophlebia marginata																							
Leptophlebia vespertina																		×				×	
Heptagenia fuscogrisea																							
Heptagenia sulphurea	×	×	×						×	×	×	×											
Electrogena lateralis																							
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis			×																				
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus			×																				
Baetis rhodani	×	×						×	×	×	×	×						×					
Baetis muticus			×					×															
Baetis atrebatinus	×																						
Centroptilum luteolum	×	×		×				×	×	×	×	×						×					
Cloeon simile		×														×	×	×			×		
Cloeon dipterum		×															×	×				×	
Procloeon bifidum	×																						
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus	×																						
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
R265888	27	158	R. Fergus	1930/31/32	Harris manuscript
R271911	27	158	R. Fergus	1931/32	Harris manuscript
R284888	27	158	R. Fergus	1945	Harris manuscript
R3080	27	158	R. Fergus	1936/38	Harris manuscript
R3288	27	158	R. Fergus	1933	Harris manuscript
R3377	27	158	R. Fergus	1960's	Kennedy & Fitzmaurice (1971)
R3377	27	158	R. Fergus	1973-77	Whelan (1980a)
R346785	27	158	R. Fergus	1938	Harris manuscript
R3090	27	158	Kilmacduagh Str.	1996	Kelly-Quinn (present study)
R1172	28	152	Doo L.	1988/89	Bowman (1991b)
R1372	28	152	Doo L.	1997	Kelly-Quinn (present study)
R1090	28	149	Lickeen L.	1997	Kelly-Quinn (present study)
R1871	28	152	Lough Naminna	1988/89	Bowman (1991b)
R1372	28	152	Doo L. (Inflow Str)	1988/89	Bowman (1991b)
R123623	28	154	Doonbeg R.	1997	Kelly-Quinn (present study)
R176707	28	152	Lough Naminna Inflow	1988/89	Bowman (1991b)
M4000	29	-	Caherglassan Turlough	1996	Reynolds (unpublished records)/MKQ*
M4106	29	-	Caherglassaun Turlough	1996	Kelly-Quinn (present study)
M4000	29	-	Coole Turlough	1996	Reynolds (unpublished records)/MKQ*
M4000	29	146	L. Coy	1996	Reynolds (unpublished records)/MKQ*
M4000	29	-	Garryland Turlough	1996	Reynolds (unpublished records)/MKQ*
M4000	29	-	Hawkhill Turlough	1996	Reynolds (unpublished records)/MKQ*
M6010	29	145	L. Rea	1997	Kelly-Quinn (present study)

Caenis macrura																							
Caenis luctuosa										×	×	×											×
Caenis rivulorum																							
Caenis horaria											×												×
Ephemerella ignita	×	×				×			×						×								
Ephemerella notata																							
Ephemera danica	×			×		×	×																
Paraleptophlebia cincta															×								
Leptophlebia marginata																							
Leptophlebia vespertina											×		×			×							
Heptagenia fuscogrisea			×																				
Heptagenia sulphurea												×			×								
Electrogena lateralis																							
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar																							
Ecdyonurus insignis					×																		
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus															×								
Baetis rhodani					×	×			×					×	×	×							
Baetis muticus					×										×								
Baetis atrebatinus				×																			
Centroptilum luteolum					×																		
Cloeon simile											×	×											×
Cloeon dipterum																	×	×	×	×	×	×	
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus				×				×									×	×			×	×	
Ameletus inopinatus																							
NGR	R265888	R271911	R284888	R3080	R3288	R3377	R3377	R346785	R3090	R1172	R1372	R1090	R1871	R1372	R123623	R176707	M4000	M4106	M4000	M4000	M4000	M4000	M6010

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
M386022	29	-	Roo Turlough	1996	Reynolds (unpublished records)/MKQ*
M368010	29	-	Roo Turlough (dugout)	1996	Reynolds (unpublished records)/MKQ*
M386001	29	-	S. of Roo Turlough	1996	Reynolds (unpublished records)/MKQ*
M4103	29	-	Turlough pool	1979	Natural History Museum Dublin (Connolly)
M4000	29	146	Boleyneendorrish R.	1996	Reynolds (unpublished records)/MKQ*
M064425	30	143	L. Agraffard	1979	Connolly (1986), Connolly & McCarthy (1993)
M227309	30	143	Ballycuirke L.	1979	Connolly (1986), Connolly & McCarthy (1993)
M233318	30	143	Ballycuirke L.	1996/97	Kelly-Quinn (present study)
M029445	30	143	L. Bofin	1979	Connolly (1986), Connolly & McCarthy (1993)
M1070	30	143	L. Carra	1997	Kelly-Quinn (present study)
M164686	30	143	L. Carra	1977	Natural History Musuem Dublin
M1070	30	143	L. Carra	1969	Moriarty (1972 & 1973b)
M1965	30	143	L. Carra	1973-77	Whelan (1980a & b)
M412673	30	143	Castlereagh L.	1979	Connolly (1986), Connolly & McCarthy (1993)
M067556	30	143	L. Coolin	1979	Connolly (1986), Connolly & McCarthy (1993)
M1040	30	143	L. Corrib	pre-1950	Harris manuscript
M1040	30	143	L. Corrib	1996	Kelly-Quinn (present study)
M1243	30	143	L. Corrib	1953	Harris manuscript
M2030	30	143	L. Corrib	1946	Harris manuscript
M2030	30	143	L. Corrib	pre 1910	King (1889), King & Halbert (1910), Kennedy (1971)
M2030	30	143	L. Corrib	1973-77	Whelan (1980a)
M0050	30	143	L. Corrib	1968	Moriarty (1972&1973b)
M1040	30	143	L. Corrib	1960's	Kennedy & Fitzmaurice (1971)

Caenis macrura																							
Caenis luctuosa						×	×	×	×														
Caenis rivulorum																							
Caenis horaria						×	×	×						×	×								
Ephemerella ignita					×									×									
Ephemerella notata																							
Ephemera danica								×		×	×	×	×			×			×		×	×	×
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina						×	×		×					×	×			×					
Heptagenia fuscogrisea						×	×	×	×								×						
Heptagenia sulphurea									×										×	×		×	
Electrogena lateralis						×									×	×			×				
Rhithrogena semicolorata						×																	
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar					×																		
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani					×	×			×														
Baetis muticus					×	×																	
Baetis atrebatinus																							
Centroptilum luteolum						×	×	×	×						×							×	
Cloeon simile						×	×	×	×					×	×					×		×	
Cloeon dipterum	×	×	×				×							×									
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus				×																			
Ameletus inopinatus																							
NGR	M386022	M368010	M386001	M4103	M4000	M064425	M227309	M233318	M029445	M1070	M164686	M1070	M1965	M412673	M067556	M1040	M1040	M1243	M2030	M2030	M2030	M0050	M1040

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
M1040	30	143	L. Corrib	1967	Moriarty (1972&1973b)
M118456	30	143	L. Corrib	1979	Connolly (1986), Connolly & McCarthy (1993)
M118458	30	143	L. Corrib	1979	Natural History Museum Dublin (Connolly)
M119465	30	143	L. Corrib	1980	Natural History Museum Dublin (Connolly)
M2030	30	143	L. Corrib	1969	Moriarty (1972&1973b)
M230410	30	143	L. Corrib	1980	Natural History Museum Dublin (Connolly)
M258310	30	143	L. Corrib	1980	Natural History Museum Dublin (Connolly)
M2630	30	143	L. Corrib	1990's	O'Keeffe (1993)
M2831	30	143	L. Corrib	1990's	O'Keeffe (1993)
M2931	30	143	L. Corrib	1990's	O'Keeffe (1993)
M211786	30	143	L. Frank	1979	Connolly (1986), Connolly & McCarthy (1993)
M230370	30	143	Gortachalla L.	1979	Connolly (1986), Connolly & McCarthy (1993)
M5060	30	-	Gortduff Turlough	1996	Reynolds (unpublished records)/MKQ*
M308488	30	143	L. Hackett	1979	Connolly (1986), Connolly & McCarthy (1993)
M083804	30	143	L. Kip	pre 1910	King (1889), King & Halbert (1910)
M187298	30	143	L. Kip	1979	Natural History Museum Dublin (Connolly)
M198284	30	143	L. Kip	1979	Connolly (1986), Connolly & McCarthy (1993)
M010640	30	143	L. near L. Nadirkmore	1979	Connolly (1986), Connolly & McCarthy (1993)
M0030	30	143	Lettercraffroe L.	1996	Kelly-Quinn (present study)
M014457	30	143	Loughaunierin	1979	Connolly (1986), Connolly & McCarthy (1993)
M1060	30	143	L. Mask	1960's	Kennedy & Fitzmaurice (1971)
M1060	30	143	L. Mask	1927/48	Harris manuscript
M1060	30	143	L. Mask	1996	Kelly-Quinn (present study)

NGR	M1040	M118456	M118458	M119465	M2030	M230410	M258310	M2630	M2831	M2931	M211786	M230370	M5060	M308488	M083804	M187298	M198284	M010640	M0030	M014457	M1060	M1060	M1060
Caenis macrura																							
Caenis luctuosa		×					×	×	×	×	×	×		×			×			×			×
Caenis rivulorum																×							
Caenis horaria		×						×		×	×	×		×			×						×
Ephemerella ignita																							
Ephemerella notata																							
Ephemera danica	×	×		×	×			×													×	×	
Paraleptophlebia cincta		×																					
Leptophlebia marginata																							
Leptophlebia vespertina		×				×	×				×			×			×	×	×	×		×	
Heptagenia fuscogrisea																							
Heptagenia sulphurea		×																				×	
Electrogena lateralis																							
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar		×																				×	
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani												×											×
Baetis muticus																						×	
Baetis atrebatinus																							
Centroptilum luteolum		×	×				×	×				×		×			×	×		×		×	
Cloeon simile					×		×	×	×	×	×	×		×			×			×			
Cloeon dipterum											×	×	×	×									
Procloeon bifidum																							×
Siphlonurus armatus																							
Siphlonurus lacustris															×								
Siphlonurus alternatus																						×	
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
M1168	30	143	L. Mask	1996	Kelly-Quinn (present study)
M139636	30	143	L. Mask	1996	Kelly-Quinn (present study)
M1060	30	143	L. Mask	1969	Moriarty (1972&1973b)
M1060	30	143	L. Mask	1930	Kimmins (1932)
M1060	30	143	L. Mask	1995/96	Whelan (1980a & b)
M119726	30	143	L. Mask	1979	Connolly (1986), Connolly & McCarthy (1993)
M1965	30	143	L. Mask	1973-77	Whelan (1980a & b)
M1565	30	143	L. Mask	1997	Kelly-Quinn (present study)
L9040	30	143	L. Maumwee	1996/97	Kelly-Quinn (present study)
L9040	30	143	L. Maumwee	pre 1910	King (1889), King & Halbert (1910)
L9748	30	143	L. Maumwee	1984/85/87/88/89/90	Bowman (1986, 1991a &b)
M118775	30	143	L. Nacorralea	1979	Connolly (1986), Connolly & McCarthy (1993)
M005642	30	143	L. Nadirkmore	1979	Connolly (1986), Connolly & McCarthy (1993)
L967598	30	143	L. Nafooey	1979	Connolly (1986), Connolly & McCarthy (1993)
L971637	30	143	Pool on Maumtrasna Mtn.	1979	Connolly (1986), Connolly & McCarthy (1993)
M193373	30	143	Ross L.	1978	Natural History Museum Dublin (Connolly)
M202358	30	143	Ross L.	1979	Connolly (1986), Connolly & McCarthy (1993)
M193373	30	143	Ross L.	1979	Connolly (1986), Connolly & McCarthy (1993)
M172325	30	143	Tawneybeg L	1979	Natural History Museum Dublin (Connolly)
M172325	30	143	Tawneybeg L.	1979	Connolly (1986), Connolly & McCarthy (1993)
L996501	30	-	n/a	pre 1910	King (1889), King & Halbert (1910)
M1243	30	143	n/a	1926	Mosely (1930)
M1070	30	143	Aille R.	1928	Harris manuscript

NGR	M1168	M139636	M1060	M1060	M1060	M119726	M1965	M1565	L9040	L9040	L9748	M118775	M005642	L967598	L971637	M193373	M202358	M193373	M172325	M172325	L996501	M1243	M1070
Caenis macrura																							
Caenis luctuosa									×		×			×			×	×					
Caenis rivulorum						×																	
Caenis horaria									×											×			
Ephemerella ignita						×								×									
Ephemerella notata																							
Ephemera danica		×	×		×		×							×		×	×	×				×	×
Paraleptophlebia cincta											×												
Leptophlebia marginata											×												
Leptophlebia vespertina									×		×	×	×	×	×		×	×	×	×			
Heptagenia fuscogrisea	×										×			×			×	×					
Heptagenia sulphurea				×							×			×									
Electrogena lateralis											×			×								×	
Rhithrogena semicolorata						×																	
Rhithrogena germanica																							
Ecdyonurus venosus						×								×									
Ecdyonurus torrentis																							
Ecdyonurus dispar				×		×																	
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus						×																	
Baetis rhodani						×					×			×									
Baetis muticus			×			×																	
Baetis atrebatinus																							
Centroptilum luteolum			×								×			×			×	×					
Cloeon simile		×						×			×	×					×	×		×	×		
Cloeon dipterum								×									×	×		×			
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris										×	×										×		
Siphlonurus alternatus																			×	×			
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
M143761	30	143	Aille R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M145738	30	143	Aille R. Cloon L./L.Mask	1979	Connolly (1986), Connolly & McCarthy (1993)
M5060	30	143	Attiflynn R.	1996	Reynolds (unpublished records)/MKQ*
M232325	30	143	Ballycuirke L. (outflow)	1979	Connolly (1986), Connolly & McCarthy (1993)
L966527	30	143	Bealnabrack R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M2040	30	143	Black R	1934/35/48	Harris manuscript
M2746	30	143	Black R.	1934/36	Harris manuscript
M2852	30	143	Black R.	1973-77	Whelan (1980a)
M257490	30	143	Black R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M262488	30	143	Black R. trib.	1979	Connolly (1986), Connolly & McCarthy (1993)
M8238	30	143	Bunowen R.	1973-77	Whelan (1980a)
M084424	30	143	Bunowen R.(at Glengowla)	1979	Connolly (1986), Connolly & McCarthy (1993)
M1000	30	143	Caher R.	1961	Natural History Museum London (Bradley)
M201354	30	143	Canal at Knockbane	1979	Connolly (1986), Connolly & McCarthy (1993)
M222329	30	143	Canal near Moycullen	1979	Connolly (1986), Connolly & McCarthy (1993)
M201354	30	143	Canal near Rosslake	1979	Natural History Museum Dublin (Connolly)
M3030	30	143	Clare Galway R.	1938	Harris manuscript
M321328	30	143	Clare R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M321328	30	143	Clare R.	1979	Natural History Museum Dublin (Connolly)
M421538	30	143	Clare R.	1979	Natural History Museum Dublin (Connolly)
M421538	30	143	Clare R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M4552	30	143	Clare-Galway R.	1973-77	Whelan (1980a)
M323350	30	143	Clegg R.	1979	Connolly (1986), Connolly & McCarthy (1993)

Caenis macrura																							
Caenis luctuosa				×					×			×		×	×			×			×		×
Caenis rivulorum												×						×			×		
Caenis horaria				×														×	×				
Ephemerella ignita	×	×	×		×		×		×	×		×						×			×		×
Ephemerella notata																							
Ephemera danica	×	×				×		×			×						×				×	×	
Paraleptophlebia cincta		×																			×		×
Leptophlebia marginata																							
Leptophlebia vespertina	×	×		×	×					×		×		×	×			×					×
Heptagenia fuscogrisea	×	×		×	×	×				×				×	×			×			×		×
Heptagenia sulphurea						×															×		
Electrogena lateralis												×									×		
Rhithrogena semicolorata																					×		
Rhithrogena germanica																							
Ecdyonurus venosus												×	×				×				×		
Ecdyonurus torrentis																							
Ecdyonurus dispar					×																		
Ecdyonurus insignis																				×	×		
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus	×	×			×							×									×		
Baetis rhodani	×	×	×		×	×			×	×		×		×	×		×			×	×		×
Baetis muticus	×	×			×	×	×		×	×											×		
Baetis atrebatinus	×	×				×				×				×				×	×		×		×
Centroptilum luteolum	×	×		×	×	×						×		×	×			×			×		×
Cloeon simile		×		×	×				×					×	×	×		×					×
Cloeon dipterum		×												×	×	×							
Procloeon bifidum						×																	
Siphlonurus armatus																							
Siphlonurus lacustris					×									×									
Siphlonurus alternatus		×																					
Ameletus inopinatus																							
NGR	M143761	M145738	M5060	M232325	L966527	M2040	M2746	M2852	M257490	M262488	M8238	M084424	M1000	M201354	M222329	M201354	M3030	M321328	M321328	M421538	M421538	M4552	M323350

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
M200722	30	143	Cloondaver R.	1997	Kelly-Quinn (present study)
M276450	30	143	Clooneen R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M2020	30	143	R. Corrib	pre-1950	Harris manuscript
M2020	30	143	R. Corrib	1973-77	Whelan (1980a)
M3030	30	143	Cregg R.	pre-1950	Harris manuscript
M3535	30	143	Cregg R.	1970's	Fahy (1973b)
M194551	30	143	Cross R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M500798	30	143	Dalgan R.	1996	Kelly-Quinn (present study)
M510810	30	143	Dalgan R.	1996	Kelly-Quinn (present study)
M431676	30	143	Dalgan R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M040525	30	143	Dooghta R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M320305	30	143	Drain (Galway-Headford Rd.)	1979	Connolly (1986), Connolly & McCarthy (1993)
M1540	30	143	Drimneen R.	1980's	Walsh (1988)
L950525	30	143	Failmore R.	1997	Kelly-Quinn (present study)
L963520	30	143	Failmore R.	1979	Connolly (1986), Connolly & McCarthy (1993)
L962510	30	143	Failmore R. Trib.	1979	Connolly (1986), Connolly & McCarthy (1993)
M011587	30	143	Finny R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M098681	30	143	Glensaul R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M445469	30	143	Grange R.	1979	Natural History Museum Dublin (Connolly)
M445469	30	143	Grange R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M022447	30	143	Inflow R. to L. Bofin	1979	Connolly (1986), Connolly & McCarthy (1993)
M163680	30	143	Keel R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M318413	30	143	Kilroe R.	1979	Connolly (1986), Connolly & McCarthy (1993)

Caenis macrura							×			×													
Caenis luctuosa	×	×								×	×							×	×	×		×	
Caenis rivulorum								×								×		×					
Caenis horaria										×										×			
Ephemerella ignita	×					×	×	×	×	×	×		×	×	×	×	×	×	×	×	×		×
Ephemerella notata																							
Ephemera danica			×	×	×					×	×		×							×		×	×
Paraleptophlebia cincta								×		×	×									×			
Leptophlebia marginata																							
Leptophlebia vespertina		×								×	×	×				×				×	×	×	
Heptagenia fuscogrisea										×	×				×	×				×	×	×	
Heptagenia sulphurea	×							×	×	×							×						
Electrogena lateralis										×					×	×							
Rhithrogena semicolorata						×			×	×					×		×	×					
Rhithrogena germanica																							
Ecdyonurus venosus						×			×				×		×	×	×	×					
Ecdyonurus torrentis	×																						
Ecdyonurus dispar	×						×			×					×					×			
Ecdyonurus insignis										×										×			
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus								×		×			×		×		×	×		×			
Baetis rhodani	×	×				×	×	×	×	×	×		×	×	×	×	×	×		×	×	×	×
Baetis muticus	×						×	×	×	×			×		×		×	×		×		×	
Baetis atrebatinus		×								×										×			
Centroptilum luteolum		×					×			×	×									×		×	×
Cloeon simile		×										×									×	×	×
Cloeon dipterum												×								×			
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris											×					×							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	M200722	M276450	M2020	M2020	M3030	M3535	M194551	M500798	M510810	M431676	M040525	M320305	M1540	L950525	L963520	L962510	M011587	M098681	M445469	M445469	M022447	M163680	M318413

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
M3241	30	143	Kilroe R.	pre-1950	Harris manuscript
M3241	30	143	Kilroe R.	1980's	Walsh (1988)
M187298	30	143	L. Kip R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M198285	30	143	L. Kip R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M198285	30	143	L. Kip R.	1979	Natural History Museum Dublin (Connolly)
M220310	30	143	L. Kip R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M220310	30	143	L. Kip R.	1980's	Natural History Museum Dublin (Connolly)
L975490	30	143	L. Maumwee (Feeder Stream)	1984/85/88/89	Bowman (1986, 1991a &b)
L974485	30	143	L. Maumwee (Feeder Stream)	1987/88/89	Bowman (1986, 1991a &b)
M5060	30	143	Lacka Str. (trib. Sinking R.)	1996	Reynolds (unpublished records)/MKQ*
M225733	30	143	Meander R. Trib.	1979	Connolly (1986), Connolly & McCarthy (1993)
M012471	30	143	Owenwee R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M053628	30	143	Owenbrin R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M259691	30	143	R. Robe	1996	Kelly-Quinn (present study)
M201049	30	143	Rathborney R.	1981	Natural History Museum Dublin (Connolly)
M148553	30	143	River at Cong	1979	Connolly (1986), Connolly & McCarthy (1993)
M1060	30	143	Robe R.	1928	Harris manuscript
M1965	30	143	Robe R.	1973-77	Whelan (1980a & b)
M183642	30	143	Robe R. (at Ballinrobe)	1979	Connolly (1986), Connolly & McCarthy (1993)
M364724	30	143	Robe R. (at Castlemagarrett)	1979	Connolly (1986), Connolly & McCarthy (1993)
M119726	30	143	Shrah Br. N. of L. Mask	1979	Natural History Museum Dublin (Connolly)
M500639	30	143	Sinking R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M500639	30	143	Sinking R.	1979	Natural History Museum Dublin (Connolly)

Caenis macrura																					×	
Caenis luctuosa			×			×					×								×				
Caenis rivulorum			×	×									×			×				×		×	
Caenis horaria				×																			
Ephemerella ignita		×	×	×		×				×	×	×	×	×		×				×		×	
Ephemerella notata																							
Ephemera danica	×					×											×	×				×	
Paraleptophlebia cincta		×	×	×				×	×											×			
Leptophlebia marginata					×			×	×														
Leptophlebia vespertina		×	×	×				×			×	×	×						×	×		×	
Heptagenia fuscogrisea				×		×						×	×			×			×	×		×	
Heptagenia sulphurea				×	×	×					×											×	
Electrogena lateralis									×						×								
Rhithrogena semicolorata													×	×							×	×	
Rhithrogena germanica																							
Ecdyonurus venosus		×				×				×			×										
Ecdyonurus torrentis																							
Ecdyonurus dispar						×	×				×												
Ecdyonurus insignis																							
Baetis vernus																						×	×
Baetis fuscatus																							
Baetis scambus		×										×	×							×	×	×	
Baetis rhodani		×	×	×		×		×	×	×	×	×	×	×		×			×	×		×	
Baetis muticus		×	×			×					×	×		×		×				×	×	×	
Baetis atrebatinus												×				×			×	×		×	
Centroptilum luteolum	×	×	×	×		×					×	×				×			×	×		×	
Cloeon simile			×	×															×				
Cloeon dipterum																			×				
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris									×														
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	M3241	M3241	M187298	M198285	M198285	M220310	M220310	L975490	L974485	M5060	M225733	M012471	M053628	M259691	M201049	M148553	M1060	M1965	M183642	M364724	M119726	M500639	M500639

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
M099465	30	143	Stream (at Gortdrshagh)	1979	Connolly (1986), Connolly & McCarthy (1993)
M263776	30	143	Stream at Curry	1979	Connolly (1986), Connolly & McCarthy (1993)
M365625	30	143	Stream near L.Altore	1979	Connolly (1986), Connolly & McCarthy (1993)
M083392	31	-	L. Aundran	1997	Kelly-Quinn (present study)
M045278	31	139	L. Crockaillenalle South	1997	Kelly-Quinn (present study)
L8040	31	136	Derryclare L.	1927	Harris manuscript
L8050	31	136	L. Inagh	1936	Harris manuscript
L7139	31	-	Anon	1944	Harris manuscript
M0122	31	-	n/a,	1926	Mosely (1930)
M107426	31	140	Owenriff R.	1979	Connolly (1986), Connolly & McCarthy (1993)
M072807	32	-	L. Aille .	pre 1910	King (1889), King & Halbert (1910)
M0080	32	125	Anon L.	pre 1910	King (1889), King & Halbert (1910)
L9988	32	-	Ballin Lough	1991	O'Neill (1992)
L593557	32	-	Barnahallia L.	1997	Kelly-Quinn (present study)
M070980	32	108	Beltra L.	1963	Harris manuscript
M0798	32	108	Beltra L.	1994/97	May (1994)
L913971	32	-	Carheenbrack L.	1997	Kelly-Quinn (present study)
F645296	32	124	Cross L.	1996	Kelly-Quinn (present study)
M0094	32	108	Doogan L.	pre 1910	King (1889), King & Halbert (1910)
M007802	32	135	Knappaghbeg L.	pre 1910	King (1889), King & Halbert (1910)
M054428	32	-	L. between L. Agraffard/L.Bofin	1979	Connolly (1986), Connolly & McCarthy (1993)
F992083	32	107	L. Bunaveela feeder Str.	1997	Kelly-Quinn (present study)
F9000	32	107	L. Feeagh	1997	Kelly-Quinn (present study)

NGR	M099465	M263776	M365625	M083392	M045278	L8040	L8050	L7139	M0122	M107426	M072807	M0080	L9988	L593557	M070980	M0798	L913971	F645296	M0094	M007802	M054428	F992083	F9000
Caenis macrura																							
Caenis luctuosa		×	×													×		×			×		×
Caenis rivulorum	×	×																					
Caenis horaria		×																					
Ephemerella ignita	×	×								×						×						×	×
Ephemerella notata																							
Ephemera danica		×										×			×	×							
Paraleptophlebia cincta		×										×											
Leptophlebia marginata																							
Leptophlebia vespertina			×	×	×			×		×				×			×				×		
Heptagenia fuscogrisea		×																			×		
Heptagenia sulphurea		×														×					×	×	×
Electrogena lateralis	×															×							
Rhithrogena semicolorata	×																						
Rhithrogena germanica																							
Ecdyonurus venosus	×	×	×																				
Ecdyonurus torrentis																							
Ecdyonurus dispar	×	×																					
Ecdyonurus insignis												×											
Baetis vernus			×																				
Baetis fuscatus																							
Baetis scambus		×								×												×	
Baetis rhodani	×	×	×			×		×		×												×	
Baetis muticus	×	×					×			×													×
Baetis atrebatinus		×								×													
Centroptilum luteolum			×			×				×											×		
Cloeon simile			×	×						×	×		×						×	×	×		
Cloeon dipterum																							
Procloeon bifidum												×											
Siphlonurus armatus									×														
Siphlonurus lacustris																					×		
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
F9000	32	107	L. Feeagh	1971/94	Partridge & Foy (1971), Roe (1997),
					Zwart (1995), Kelly-Quinn (present study)
L9090	32	107	L. Feeagh	1971/94	Partridge & Foy (1971), Roe (1997),
					Zwart (1995), Kelly-Quinn (present study)
L661460	32	-	L. Gaarrannabeast	1997	Kelly-Quinn (present study)
L9776	32	126	Moher L.	1996/97	Kelly-Quinn (present study)
L725533	32	-	L. Nahildo	1997	Kelly-Quinn (present study)
L953818	32	-	Prospect L.	pre 1910	King (1889), King & Halbert (1910)
L753774	32	-	Roonah L.	1997	Kelly-Quinn (present study)
L6080	32	-	n/a	1909	Halbert (1912)
L6080	32	-	n/a	pre 1910	King (1889), King & Halbert (1910)
L974061	32	107	R. Altaconey	1997	Kelly-Quinn (present study)
F9605	32	107	R. Altahoney	1968-1971	Fahy (1970, 1972, 1973a & b,1975)
L892810	32	1	Anon R.	1995	Kelly-Quinn (present study)
L824777	32	127	Bunowen R.	1997	Kelly-Quinn (present study)
L9080	32	125	Carrowbeg R.	pre 1910	King (1889), King & Halbert (1910)
M0080	32	-	Carrowbeg R.	pre 1910	King (1889), King & Halbert (1910)
L701866	32	-	Dorree R.	1997	Kelly-Quinn (present study)
L928659	32	131	R. Erriff	1997	Kelly-Quinn (present study)
F9000	32	107	Glennamong R.	1997	Kelly-Quinn (present study)
M0095	32	108	Newport R.	pre 1910	King (1889), King & Halbert (1910)
L6050	32	135	Owenglin R.	1932	Harris manuscript
L672507	32	135	Owenglin R.	1997	Kelly-Quinn (present study)

Caenis macrura																	×						
Caenis luctuosa	×		×			×																	
Caenis rivulorum													×										
Caenis horaria	×		×			×																	
Ephemerella ignita	×		×									×	×		×			×					
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta													×			×							
Leptophlebia marginata						×																	
Leptophlebia vespertina					×	×	×																
Heptagenia fuscogrisea																							
Heptagenia sulphurea	×		×										×										
Electrogena lateralis	×		×							×	×		×										
Rhithrogena semicolorata													×	×									
Rhithrogena germanica																							
Ecdyonurus venosus													×	×					×				
Ecdyonurus torrentis																							
Ecdyonurus dispar	×											×											
Ecdyonurus insignis																							×
Baetis vernus																							
Baetis fuscatus										×	×												
Baetis scambus												×	×		×				×				×
Baetis rhodani	×		×									×	×	×	×			×	×	×			×
Baetis muticus										×	×	×	×		×				×			×	×
Baetis atrebatinus																							
Centroptilum luteolum	×		×			×							×									×	
Cloeon simile	×					×		×	×												×		
Cloeon dipterum						×																	
Procloeon bifidum			×																				
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus						×																	
Ameletus inopinatus																							
NGR	F9000		L9090		L661460	L9776	L725533	L953818	L753774	L6080	L6080	L974061	F9605	L892810	L824777	L9080	M0080	L701866	L928659	F9000	M0095	L6050	L672507

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
F746179	33	-	Anon L.	1997	Kelly-Quinn (present study)
F791239	33	-	Anon L.	1997	Kelly-Quinn (present study)
F882408	33	-	Anon L.	1997	Kelly-Quinn (present study)
F936408	33	-	Anon L.	1997	Kelly-Quinn (present study)
F899367	33	-	Anon L.	1997	Kelly-Quinn (present study)
F823287	33	105	Carrowmore L.	1997	Kelly-Quinn (present study)
L762962	33	-	Knockacorraun L	1997	Kelly-Quinn (present study)
G023277	33	105	L. Naweeloge	1997	Kelly-Quinn (present study)
F7500	33	-	n/a	pre 1910	King (1889), King & Halbert (1910)
G0030	33	105	Altderg R.	1962/63	Browne (1969)
F9010	33	105	Altnabrocky R.	1962/63	Browne (1969)
F704394	33	-	Anon R.	1997	Kelly-Quinn (present study)
F705358	33	k5	Clooneen R.	1997	Kelly-Quinn (present study)
F664054	33	-	Gallaghers R.	1997	Kelly-Quinn (present study)
F937338	33	100	Glenamoy R.	1997	Kelly-Quinn (present study)
F880354	33	100	Glenamoy R. trib.	1972	McCaul (unpublished records)
F881354	33	100	Glenamoy R. trib.	1971/72	McCaul (unpublished records)
F890354	33	100	Glenamoy R. trib.	1972	McCaul (unpublished records)
G0030	33	105	Inagh R.	1962/63	Browne (1969)
F579058	33	-	Mill Str.	1997	Kelly-Quinn (present study)
F9020	33	105	Muing R.	1962/63	Browne (1969)
F8020	33	105	Muingnumea Str.	1962/63	Browne (1969)
F8020	33	105	Owenmore R.	1997	Kelly-Quinn (present study)

NGR	F746179	F791239	F882408	F936408	F899367	F823287	L762962	G023277	F7500	G0030	F9010	F704394	F705358	F664054	F937338	F880354	F881354	F890354	G0030	F579058	F9020	F8020	F8020
Caenis macrura																							
Caenis luctuosa																							
Caenis rivulorum																							
Caenis horaria																							
Ephemerella ignita											×	×			×					×			×
Ephemerella notata																							
Ephemera danica																							
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina	×	×	×	×	×		×	×								×	×	×					
Heptagenia fuscogrisea																							
Heptagenia sulphurea						×					×				×								×
Electrogena lateralis						×				×													
Rhithrogena semicolorata										×	×								×				
Rhithrogena germanica																							
Ecdyonurus venosus										×	×								×		×	×	×
Ecdyonurus torrentis																							
Ecdyonurus dispar											×												
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus													×	×	×								×
Baetis rhodani											×	×		×	×				×	×	×	×	×
Baetis muticus										×		×			×				×				×
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile									×														×
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
F8020	33	102	Owenmore R.	1962/63	Browne (1969)
F9020	33	105	Sheskin R.	1962/63	Browne (1969)
F9020	33	105	Srahnakilly R.	1962/63	Browne (1969)
G077390	33	101	Sralagagh R.	1997	Kelly-Quinn (present study)
M5080	34	110	L. Caheer	1973-77	Whelan (1980a)
M2080	34	110	L. Carrowmore	1997	Kelly-Quinn (present study)
M148906	34	110	Castlebar Lake	pre 1910	King (1889), King & Halbert (1910)
G1000	34	110	L. Conn	pre-1950	Harris manuscript
G1010	34	110	L. Conn	1997	Kelly-Quinn (present study)
G2000	34	110	L. Conn	1951	Macan & Lund (1954)
G 1010	34	110	L. Conn	1972	Moriarty (1973a & b)
M1010	34	110	L. Conn	1960's	Kennedy & Fitzmaurice (1971)
G1000	34	110	L. Conn	1995/96	Whelan (1980a & b)
G2000	34	110	L. Cullin	pre-1950	Harris manuscript
G2000	34	110	L. Cullin	1973-77	Whelan (1980a)
G017164	34	110	Lackalustraun L.	1997	Kelly-Quinn (present study)
G3010	34	110	L. Talt	1950's	Macan (1958b)
G3915	34	110	L. Talt	1951	Macan & Lund (1954)
G4014	34	110	L. Talt	1951	Cotton (unpublished records)
G4014	34,	110	L. Talt	1996	Kelly-Quinn (present study)
G171313	34	104	Cloonaghmore R.	1948	Harris manuscript
G3120	34	110	Glenree R.	1996	Kelly-Quinn (present study)
G3020	34	110	Glenree R.	1990	O'Grady & King (1992)

Caenis macrura																							
Caenis luctuosa											×									×			
Caenis rivulorum																							×
Caenis horaria																							
Ephemerella ignita				×																			
Ephemerella notata																							
Ephemera danica					×		×	×	×		×	×	×	×	×					×		×	
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina							×									×							
Heptagenia fuscogrisea																							
Heptagenia sulphurea								×			×						×	×	×	×			
Electrogena lateralis																				×			
Rhithrogena semicolorata	×	×	×																			×	
Rhithrogena germanica																							
Ecdyonurus venosus	×	×	×																				
Ecdyonurus torrentis																							
Ecdyonurus dispar								×		×													
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani	×	×		×																		×	×
Baetis muticus			×	×																	×	×	
Baetis atrebatinus																							
Centroptilum luteolum								×										×	×	×			
Cloeon simile						×																	
Cloeon dipterum						×																	
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	F8020	F9020	F9020	G077390	M5080	M2080	M148906	G1000	G1010	G2000	G 1010	M1010	G1000	G2000	G2000	G017164	G3010	G3915	G4014	G4014	G171313	G3120	G3020

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
G3020	34	110	Glenree R.	1960/62	Toner & O'Riordan (1965)
G2010	34	110	R. Moy	pre-1950	Harris manuscript
G2519	34	110	R. Moy	1973-77	Whelan (1980a & b)
G494061	34	110	Owengarve R.	1997	Kelly-Quinn (present study)
G3018	34	110	Srafaungal R.	1997	Kelly-Quinn (present study)
G3010	34	110	Srafaungal R.	1990	O'Grady & King (1992)
G7000	35	116	L. Arrow	1925/37	Harris manuscript
G7000	35	116	L. Arrow	1973-77	Whelan (1980a)
G7010	35	116	L. Arrow	1951	Macan & Lund (1954)
G7010	35	116	L. Arrow	1998	Kelly-Quinn (present study)
G782112	35	116	L. Arrow	1997	Kelly-Quinn (present study)
G7914	35	116	L. Arrow	1951	Cotton (unpublished records)
G7716	35	116	L. Arrow Outlet	pre-1950	Harris manuscript
G4020	35	114	L. Easky	1996	Kelly-Quinn (present study)
G7030	35	117	L. Gill	1972	Cotton (unpublished records)
G7030	35	117	L. Gill	1951	Macan & Lund (1954)
G7132	35	117	L. Gill	1951	Cotton (unpublished records)
G720324	35	117	L. Gill	1989	Cotton (unpublished records)
G7233	35	117	L. Gill	1981	Cotton (unpublished records)
G7235	35	117	L. Gill	1986	Cotton (unpublished records)
G724344	35	117	L. Gill	1989	Cotton (unpublished records)
G7331	35	117	L. Gill	1993	Cotton (unpublished records)
G739318	35	117	L. Gill	1989	Cotton (unpublished records)

Caenis macrura																							
Caenis luctuosa				×							×			×	×			×					×
Caenis rivulorum				×																			
Caenis horaria											×				×								
Ephemerella ignita	×			×	×				×		×	×	×		×	×	×	×			×		×
Ephemerella notata																							
Ephemera danica	×	×	×					×		×	×				×				×			×	
Paraleptophlebia cincta				×																			
Leptophlebia marginata																						×	
Leptophlebia vespertina											×												
Heptagenia fuscogrisea											×									×			
Heptagenia sulphurea				×			×																
Electrogena lateralis				×																			
Rhithrogena semicolorata				×																			
Rhithrogena germanica																							
Ecdyonurus venosus				×	×										×								
Ecdyonurus torrentis																							
Ecdyonurus dispar				×									×			×	×				×		
Ecdyonurus insignis				×																			
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus				×	×																		
Baetis rhodani	×			×	×	×																	
Baetis muticus				×	×																		
Baetis atrebatinus																							
Centroptilum luteolum	×				×		×		×		×	×				×	×						
Cloeon simile																×	×						
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																×							
Ameletus inopinatus																							
NGR	G3020	G2010	G2519	G494061	G3018	G3010	G7000	G7000	G7010	G7010	G782112	G7914	G7716	G4020	G7030	G7030	G7132	G720324	G7233	G7235	G724344	G7331	G739318

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
G7030	35	117	L. Gill	1973-77	Whelan (1980a)
G7030	35	117	L. Gill	1972	Moriarty (1973a&b)
G771330	35	117	L. Gill	1989	Cotton (unpublished records)
G791334	35	117	L. Gill	1989	Cotton (unpublished records)
G791342	35	117	L. Gill	1989	Cotton (unpublished records)
G7934	35	117	L. Gill	1951	Cotton (unpublished records)
Q593135	35	117	L. Gill	1997	Kelly-Quinn (present study)
Q596138	35	117	L. Gill	1997	Kelly-Quinn (present study)
Q6014	35	117	L. Gill	1996	Casey (1997)/MKQ*
G832457	35	117	L. Glenade	1997	Kelly-Quinn (present study)
G7040	35	119	Glencar L.	1951	Macan & Lund (1954)
G7443	35	119	Glencar L.	1995	Cotton (unpublished records)
G746436	35	119	Glencar L.	1997	Kelly-Quinn (present study)
G7543	35	119	Glencar L.	1951	Cotton (unpublished records)
G9050	35	121	L. Melvin	1951	Macan & Lund (1954)
G9051	35	121	L. Melvin	1951	Cotton (unpublished records)
G8050	35	121	L. Melvin	1973-77	Whelan (1980a)
C0618	35	121	L. Nacally	1983	Natural History Museum Dublin (Twoomey)
G700251	35	-	n/a	pre 1910	King (1889), King & Halbert (1910)
G7809	35	116	L. Arrow Inflow Str.	1996	Kelly-Quinn (present study)
G6729	35	116	Ballysodare R.	1973-77	Whelan (1980a)
G795319	35	117	Bonet R.	1989/91	Lynch (1994)
G800318	35	117	Bonet R.	1989/91	Lynch (1994)

NGR	G7030	G7030	G771330	G791334	G791342	G7934	Q593135	Q596138	Q6014	G832457	G7040	G7443	G746436	G7543	G9050	G9051	G8050	C0618	G700251	G7809	G6729	G795319	G800318
Caenis macrura																							
Caenis luctuosa		×	×						×			×	×									×	
Caenis rivulorum																							
Caenis horaria		×																×					
Ephemerella ignita		×	×	×	×	×																×	×
Ephemerella notata																							
Ephemera danica	×	×	×	×	×					×			×	×			×				×		
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina										×			×										
Heptagenia fuscogrisea																							×
Heptagenia sulphurea										×			×						×				
Electrogena lateralis													×										
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus		×																					
Ecdyonurus torrentis																							
Ecdyonurus dispar			×	×	×	×									×	×						×	
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani																							
Baetis muticus																						×	
Baetis atrebatinus																							
Centroptilum luteolum											×			×	×	×							
Cloeon simile							×	×			×												
Cloeon dipterum																				×			
Procloeon bifidum							×																
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
G8030	35	117	Bonet R.	pre 1910	King (1889), King & Halbert (1910)
G829311	35	117	Bonet R.	1989/91	Lynch (1994)
G833407	35	117	Bonet R.	1997	Kelly-Quinn (present study)
G836456	35	117	Bonet R.	1997	Kelly-Quinn (present study)
G840448	35	117	Bonet R.	1989/91	Lynch (1994)
G842447	35	117	Bonet R.	1996	Kelly-Quinn (present study)
G846335	35	117	Bonet R.	1989	Cotton (unpublished records)
G846335	35	117	Bonet R.	1989/91	Lynch (1994)
G846446	35	117	Bonet R.	1989	Cotton (unpublished records)
G846446	35	117	Bonet R.	1989/91	Lynch (1994)
G849347	35	117	Bonet R.	1989/91	Lynch (1994)
G850340	35	117	Bonet R.	1989/91	Lynch (1994)
G857355	35	117	Bonet R.	1989/91	Lynch (1994)
G867373	35	117	Bonet R.	1989	Cotton (unpublished records)
G867373	35	117	Bonet R.	1989/91	Lynch (1994)
G867420	35	117	Bonet R.	1989/91	Lynch (1994)
G872412	35	117	Bonet R.	1989/91	Lynch (1994)
G873389	35	117	Bonet R.	1989/91	Lynch (1994)
G874403	35	117	Bonet R.	1989	Cotton (unpublished records)
G874403	35	117	Bonet R.	1989/91	Lynch (1994)
G874405	35	117	Bonet R.	1989	Cotton (unpublished records)
G874405	35	117	Bonet R.	1989/91	Lynch (1994)
G881392	35	117	Bonet R.	1989/91	Lynch (1994)

Caenis macrura																							
Caenis luctuosa										×								×					×
Caenis rivulorum		×			×	×				×		×	×				×	×					×
Caenis horaria																							
Ephemerella ignita		×			×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Ephemerella notata																							
Ephemera danica	×	×		×		×						×			×			×					
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina																							
Heptagenia fuscogrisea		×																					
Heptagenia sulphurea												×	×				×		×	×		×	
Electrogena lateralis																							
Rhithrogena semicolorata		×		×	×	×						×	×		×		×	×					×
Rhithrogena germanica																							
Ecdyonurus venosus		×		×								×	×					×					×
Ecdyonurus torrentis																							
Ecdyonurus dispar		×	×		×	×	×	×		×		×	×		×	×		×	×	×			×
Ecdyonurus insignis			×																				
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus						×																	
Baetis rhodani		×		×	×	×				×		×	×		×		×	×					×
Baetis muticus		×		×	×	×	×	×	×	×	×	×	×				×	×					×
Baetis atrebatinus																							
Centroptilum luteolum																							
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	G8030	G829311	G833407	G836456	G840448	G842447	G846335	G846335	G846446	G846446	G849347	G850340	G857355	G867373	G867373	G867420	G872412	G873389	G874403	G874403	G874405	G874405	G881392

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
G887393	35	117	Bonet R.	1989/91	Lynch (1994)
G855326	35	117	Bonet R. trib	1997	Kelly-Quinn (present study)
G6635	35	-	Cummeen Str.	1987	Cotton (unpublished records)
G7141	35	119	Drumcliff R.	1995	Cotton (unpublished records)
G7142	35	119	Druncliff R.	1988	Cotton (unpublished records)
G6321	35	116	Str. at Ballinacarrow	1987	Cotton (unpublished records)
G7035	35	117	Garavogue R.	1951	Cotton (unpublished records)
G6935	35	117	Garovogue R.	1973-77	Whelan (1980a)
G6218	35	117	Owenmore R.	1984	Cotton (unpublished records)
G6825	35	117	Owenmore R.	1973-77	Whelan (1980a)
G881392	35	117	Owenmore R.	1989	Cotton (unpublished records)
G911397	35	117	Owenmore R.	1989/91	Lynch (1994)
G941518	35	121	R. Roogagh	1990	Wright *et al.* (1995)
G5011	35	117	Tobercurry Str.	1994	Cotton (unpublished records)
G697228	35	116	Unshin R.	1997	Kelly-Quinn (present study)
G7420	35	116	Unshin R.	1973-77	Whelan (1980a & b)
G6936	35	-	n/a	pre 1910	King (1889), King & Halbert (1910)
H6010	36	-	Lakes anon	1947	Harris manuscript
H737108	36	-	Bellatrain L.	1996	Kelly-Quinn (present study)
H3020	36	-	Belturbet Lakes	1972	Moriarty (1973b)
H196212	36	123	Brackley L.	1997	Kelly-Quinn (present study)
H685182	36	123	Corkeeran L.	1996	Kelly-Quinn (present study)
H7010	36	123	L. Egish	1996	Kelly-Quinn (present study)

NGR	G887393	G855326	G6635	G7141	G7142	G6321	G7035	G6935	G6218	G6825	G881392	G911397	G941518	G5011	G697228	G7420	G6936	H6010	H737108	H3020	H196212	H685182	H7010
Caenis macrura																							
Caenis luctuosa											×	×			×				×	×	×	×	
Caenis rivulorum	×											×	×										
Caenis horaria																					×		
Ephemerella ignita	×	×									×	×	×	×									
Ephemerella notata																							
Ephemera danica				×		×		×	×	×			×		×	×	×			×	×		
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina		×												×							×		
Heptagenia fuscogrisea												×						×			×		
Heptagenia sulphurea		×											×		×		×						
Electrogena lateralis																							
Rhithrogena semicolorata	×		×	×								×	×										
Rhithrogena germanica																							
Ecdyonurus venosus	×				×							×			×								
Ecdyonurus torrentis		×													×								
Ecdyonurus dispar	×	×									×	×											
Ecdyonurus insignis		×																					
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus													×										
Baetis rhodani	×	×										×	×		×						×		
Baetis muticus	×										×	×	×		×								
Baetis atrebatinus																							
Centroptilum luteolum							×														×		
Cloeon simile																							
Cloeon dipterum																							×
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus							×																
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
H3000	36	-	L. Eonish	1968	Moriarty (1973a)
H1060	36	123	L. Erne	1950's	Macan (1958b), Macan & Lund (1954)
H187544	36	123	L. Erne	1996	Kelly-Quinn (present study)
H2030	36	123	L. Erne	pre-1950	Harris manuscript
H2030	36	123	L. Erne	1973-77	Whelan (1980a)
H3020	36	123	L. Erne	pre-1950	Harris manuscript
H305295	36	123	L. Erne	1996	Ulster Museum Collection
H331282	36	123	L. Erne	1996	Ulster Museum Collection
H3722	36	123	L. Erne	1972	Moriarty (1973a)
H1560	36	123	L. Erne (Lower)	1951	Macan & Lund (1954)
H1010	36	123	L. Gardice	1997	Kelly-Quinn (present study)
N2082	36	123	L. Gowna	1973-77	Whelan (1980a)
N2090	36	123	L. Gowna	1997	Kelly-Quinn (present study)
H314170	36	123	Holy lake	1996	Kelly-Quinn (present study)
H3000	36	123	Killeshandra Lakes	1968	Moriarty (1973b)
H503022	36	-	Lavey L.	1997	Kelly-Quinn (present study)
H560166	36	123	Long Lake	1996	Kelly-Quinn (present study)
H083384	36	123	L. Macnean	1996	IRTU, N.I.
H0852	36	-	L. Monawilkin	1995	Ulster Museum Collection
H145417	36	-	L. Nagor	1995	Ulster Museum Collection
H3000	36	123	L. Oughter	1973-77	Whelan (1980a)
H3000	36	123	L. Oughter	1951	Macan & Lund (1954)
H3000	36	123	L. Oughter	1997	Kelly-Quinn (present study)

NGR	H3000	H1060	H187544	H2030	H2030	H3020	H305295	H331282	H3722	H1560	H1010	N2082	N2090	H314170	H3000	H503022	H560166	H083384	H0852	H145417	H3000	H3000	H3000
Caenis macrura																							
Caenis luctuosa									×				×			×	×						×
Caenis rivulorum																							
Caenis horaria													×			×							×
Ephemerella ignita										×				×									
Ephemerella notata																							
Ephemera danica	×		×	×	×	×			×		×	×	×		×			×			×		
Paraleptophlebia cincta																			×				
Leptophlebia marginata																							
Leptophlebia vespertina				×																×			
Heptagenia fuscogrisea				×		×	×	×															
Heptagenia sulphurea		×		×		×				×													
Electrogena lateralis																							
Rhithrogena semicolorata																							
Rhithrogena germanica																							
Ecdyonurus venosus																							
Ecdyonurus torrentis																							
Ecdyonurus dispar			×							×													
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus																							
Baetis rhodani																							
Baetis muticus																							
Baetis atrebatinus																							
Centroptilum luteolum			×	×		×							×										×
Cloeon simile																						×	
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus										×													
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
H709070	36	123	L. Sillan	1975	O'Connor (1975), O'Connor & Bracken (1978)
H716065	36	123	L. Sillan	1975	O'Connor (1975), O'Connor & Bracken (1978)
H721057	36	123	L. Sillan	1975	O'Connor (1975), O'Connor & Bracken (1978)
H691068	36	123	L. Sillan	1975	O'Connor (1975), O'Connor & Bracken (1978)
H695074	36	123	L. Sillan	1975	O'Connor (1975), O'Connor & Bracken (1978)
H226186	36	-	Templeport lake R.	1997	Kelly-Quinn (present study)
H6010	36	-	Town Lake	1960	Harris manuscript
H555252	36	123	Anon (Finn R. catchment)	1996	Kelly-Quinn (present study)
H4010	36	123	Annalee R.	pre-1950	Harris manuscript
H4111	36	123	Annalee R.	1973-77	Whelan (1980a)
H175375	36	123	R. Arney	1990	Wright *et al.* (1995)
H175375	36	123	R. Arney.	1996	IRTU, N.I.
H236367	36	123	R. Arney.	1996	IRTU, N.I.
H162654	36	123	R. Bannagh	1990	Wright *et al.* (1995)
H2219	36	123	Bawnboy R.	1997	Kelly-Quinn (present study)
H018435	36	123	R. Black	1990	Wright *et al.* (1995)
H625530	36	123	R. Blackwater	1996	IRTU, N.I.
H281537	36	123	B'Mallard R.	1996	Wright *et al.* (1995), IRTU, N.I.
H134445	36	123	R. Boho	1990	Wright *et al.* (1995)
H378441	36	123	R. Colebrooke	1990	Wright *et al.* (1995)
H6010	36	123	Dromore R.	1933	Harris manuscript
G8762	36	123	R. Erne	1973-77	Whelan (1980a)
G987586	36	123	R. Erne	1996	IRTU, N.I.

NGR	H709070	H716065	H721057	H691068	H695074	H226186	H6010	H555252	H4010	H4111	H175375	H175375	H236367	H162654	H2219	H018435	H625530	H281537	H134445	H378441	H6010	G8762	G987586
Caenis macrura								×															
Caenis luctuosa	×	×	×	×	×						×									×			
Caenis rivulorum														×		×		×	×	×			
Caenis horaria	×	×	×	×																			
Ephemerella ignita								×	×		×			×	×	×		×	×	×			
Ephemerella notata									×		×												
Ephemera danica	×	×	×	×					×	×	×	×	×				×	×				×	×
Paraleptophlebia cincta											×			×		×		×		×			
Leptophlebia marginata																							
Leptophlebia vespertina	×	×	×		×				×														
Heptagenia fuscogrisea	×	×	×	×					×														
Heptagenia sulphurea	×							×	×		×			×		×		×			×		
Electrogena lateralis																							
Rhithrogena semicolorata											×			×		×		×	×	×			
Rhithrogena germanica																							
Ecdyonurus venosus								×							×								
Ecdyonurus torrentis															×								
Ecdyonurus dispar																							
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus														×						×			
Baetis rhodani	×					×		×			×			×	×	×		×	×	×			
Baetis muticus									×		×			×		×		×	×	×			
Baetis atrebatinus									×														
Centroptilum luteolum								×	×									×					
Cloeon simile																							
Cloeon dipterum		×					×																
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
H2040	36	123	R. Erne	1948	Harris manuscript
H2030	36	123	R. Erne	pre-1950	Harris manuscript
H425203	36	123	R. Finn	1990	Wright *et al.* (1995)
H537259	36	123	Finn R.	1996	Kelly-Quinn (present study)
H009630	36	123	R. Garvary	1990	Wright *et al.* (1995)
H222652	36	123	R. Glendurragh	1990	Wright *et al.* (1995)
H236530	36	-	Irvinestown R.	1996	IRTU, N.I.
H118521	36	123	R. Sillees	1996	IRTU, N.I.
H118521	36	123	R. Sillees	1990	Wright *et al.* (1995)
H130471	36	123	R. Sillees	1996	IRTU, N.I.
H181448	36	123	R. Sillees	1996	IRTU, N.I.
H230413	36	123	R. Sillees	1996	IRTU, N.I.
H230413	36	123	R. Sillees	1990	Wright *et al.* (1995)
H140236	36	-	Swanlinbar R.	1997	Kelly-Quinn (present study)
H111659	36	123	R. Termon	1990	Wright *et al.* (1995)
H196212	36	123	Trib. Brackley L.	1997	Kelly-Quinn (present study)
H109671	36	123	Waterfoot R.	1996	Kelly-Quinn (present study)
G9070	37	59	L. Golard	1997	Kelly-Quinn (present study)
G917698	37	60	Ballintra R.	1996	Kelly-Quinn (present study)
G724865	37	54	L. Naweeloge	1997	Kelly-Quinn (present study)
G883823	37	57	Eanybeg Water	1996	Kelly-Quinn (present study)
G939790	37	58	Eske R.	1996	Kelly-Quinn (present study)
G8090	37	52	Glen R.	1969	Mc.Carthy (1972)

Caenis macrura																							
Caenis luctuosa			×						×				×		×			×					
Caenis rivulorum					×	×			×						×				×				
Caenis horaria																		×					
Ephemerella ignita					×	×			×				×		×						×	×	×
Ephemerella notata									×														
Ephemera danica		×					×	×		×	×	×	×										
Paraleptophlebia cincta									×				×		×								
Leptophlebia marginata																							
Leptophlebia vespertina									×										×	×			
Heptagenia fuscogrisea	×		×										×										
Heptagenia sulphurea	×	×			×				×				×						×				
Electrogena lateralis																×							
Rhithrogena semicolorata					×	×			×					×	×	×							
Rhithrogena germanica																							
Ecdyonurus venosus														×		×					×	×	×
Ecdyonurus torrentis																							
Ecdyonurus dispar																	×		×				
Ecdyonurus insignis																	×		×				
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus						×									×						×	×	
Baetis rhodani			×	×	×	×			×				×	×	×	×	×		×		×	×	×
Baetis muticus					×	×			×				×		×	×			×		×	×	
Baetis atrebatinus			×																				
Centroptilum luteolum			×	×		×							×										
Cloeon simile																							
Cloeon dipterum			×	×																			
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris																							
Siphlonurus alternatus																							
Ameletus inopinatus																							
NGR	H2040	H2030	H425203	H537259	H009630	H222652	H236530	H118521	H118521	H130471	H181448	H230413	H230413	H140236	H111659	H196212	H109671	G9070	G917698	G724865	G883823	G939790	G8090

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
G8070	37	-	Inver R.	1946	Harris manuscript
H011839	37	58	Lowerymore R.	1996	Kelly-Quinn (present study)
G865663	37	-	n/a (near Coolmore)	pre 1910	King (1889), King & Halbert (1910)
R193687	38	27	L. Acrow	1997	Kelly-Quinn (present study)
G644908	38	-	L. Acruppan	1997	Kelly-Quinn (present study)
G893991	38	-	Anon L.	1997	Kelly-Quinn (present study)
B944073	38	-	L. Agary	1997	Kelly-Quinn (present study)
B7010	38	16	L. Dunglow	1951	Macan & Lund (1954)
C1523	38	30	Keel L.	pre 1910	King (1889), King & Halbert (1910)
G7896	38	48	L. Laragh	1997	Kelly-Quinn (present study)
G922903	38	50	L. Nabrackboy	1997	Kelly-Quinn (present study)
C0020	38	14	L. Veagh	pre 1910	King (1889), King & Halbert (1910)
C0020	38	14	L. Veagh	1951	Macan & Lund (1954), Macan (1955)
C025214	38	14	L. Veagh	1988/89	Bowman (1991b)
C025214	38	14	L. Veagh	1991-1994	Lynch *et al.* (1995)
C020248	38	27	Calabber R.	1983	Natural History Museum Dublin
C003194	38	14	Derrybeg R.	1988/89	Bowman (1991b)
C003194	38	14	Derrybeg R.	1991-1994	Lynch *et al.* (1995)
C008191	38	14	Glenlack Burn	1988/89	Bowman (1991b)
C008191	38	14	Glenlack burn	1991-1994	Lynch *et al.* (1995)
C0618	38	14	Glenveagh Nat. Park	1980	Natural History Museum Dublin (Twoomey)
C037199	38	14	Glenveagh Nat. Park	1983	Natural History Museum Dublin (Reynolds/Twomey)
G837936	38	50	Owenea R.	1996	Kelly-Quinn (present study)

NGR	G8070	H011839	G865663	R193687	G644908	G893991	B944073	B7010	C1523	G7896	G922903	C0020	C0020	C025214	C025214	C020248	C003194	C003194	C008191	C008191	C0618	C037199	G837936
Caenis macrura																							
Caenis luctuosa													×		×								
Caenis rivulorum																							
Caenis horaria											×										×		
Ephemerella ignita		×																					×
Ephemerella notata																							
Ephemera danica			×																				×
Paraleptophlebia cincta														×									
Leptophlebia marginata														×									
Leptophlebia vespertina				×	×	×	×			×				×	×								
Heptagenia fuscogrisea																							
Heptagenia sulphurea									×			×		×	×				×	×			×
Electrogena lateralis															×			×		×			
Rhithrogena semicolorata																	×	×	×	×			×
Rhithrogena germanica																							
Ecdyonurus venosus									×										×				×
Ecdyonurus torrentis																							
Ecdyonurus dispar		×																					×
Ecdyonurus insignis									×														
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus		×																					×
Baetis rhodani	×	×												×	×		×	×	×	×			×
Baetis muticus		×															×		×	×			×
Baetis atrebatinus		×																					
Centroptilum luteolum		×												×	×								
Cloeon simile								×					×	×									
Cloeon dipterum																							
Procloeon bifidum																							
Siphlonurus armatus																							
Siphlonurus lacustris														×	×	×		×					
Siphlonurus alternatus																						×	
Ameletus inopinatus																		×					

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
G737919	38	50	Owenea R.	1923	Southern (1924)
G8294	38	50	Owenea R.	1930	Harris manuscript
G763908	38	56	Owentocher R.	1996	Kelly-Quinn (present study)
G8080	38	56	Owentocker R.	1935	Harris manuscript
B990178	38	14	Owenveagh R.	1988/89	Bowman (1991b)
B990178	38	14	Owenveagh R.	1991-1994	Lynch *et al.* (1995)
C015216	38	14	Sruthnacoille R.	1991-1994	Lynch *et al.* (1995)
C015216	38	14	Sruthracoille R.	1988/89	Bowman (1991b)
C0416	39	31	Claggan L.	1983	Natural History Museum Dublin (O'Keeffe/Reynolds)
C184231	39	31	L. Fern	pre 1910	King (1889), King & Halbert (1910)
C0010	39	31	L. Gartan	1935	Kimmins (1938)
C0010	39	31	L. Gartan	1951	Macan & Lund (1954)
C0010	39	31	L. Gartan	1950's	Macan (1958b)
C0010	39	31	L. Gartan	1934/36	Natural History Museum London
C1322	39	-	Irvine's L.	pre 1910	King (1889), King & Halbert (1910)
C388410	39	9	Anon (headwaters Owenboy)	1996	Kelly-Quinn (present study)
C349330	39	9	Crana R.	1996	Kelly-Quinn (present study)
C891132	39	9	Glashagh R.	1996	Kelly-Quinn (present study)
CO50100	39	31	Glaskeelan R.	1996	Kelly-Quinn (present study)
C136195	39	31	Leannan R.	pre 1910	King (1889), King & Halbert (1910)
C190218	39	31	Leannan R.	1996	Kelly-Quinn (present study)
C0609	39	51	R. Lownagh	1996	Kelly-Quinn (present study)
C051134	39	31	Owenwee R.	1996	Kelly-Quinn (present study)

Caenis macrura																							
Caenis luctuosa																							
Caenis rivulorum					×	×																	
Caenis horaria																							
Ephemerella ignita			×		×	×	×										×	×	×		×	×	×
Ephemerella notata																							
Ephemera danica											×												
Paraleptophlebia cincta																							
Leptophlebia marginata																							
Leptophlebia vespertina							×																
Heptagenia fuscogrisea																							
Heptagenia sulphurea					×	×		×		×	×	×	×							×			
Electrogena lateralis						×	×					×											
Rhithrogena semicolorata		×			×	×	×	×															
Rhithrogena germanica																							
Ecdyonurus venosus					×	×	×	×							×			×	×				
Ecdyonurus torrentis									×								×						
Ecdyonurus dispar		×	×									×										×	
Ecdyonurus insignis																							
Baetis vernus																							
Baetis fuscatus																							
Baetis scambus			×																				
Baetis rhodani		×	×	×	×	×	×	×								×	×	×	×			×	×
Baetis muticus		×				×	×	×								×			×			×	
Baetis atrebatinus																							
Centroptilum luteolum		×				×				×											×		
Cloeon simile																							
Cloeon dipterum																							
Procloeon bifidum											×												
Siphlonurus armatus	×																						
Siphlonurus lacustris						×		×															
Siphlonurus alternatus											×			×									
Ameletus inopinatus																							
NGR	G737919	G8294	G763908	G8080	B990178	B990178	C015216	C015216	C0416	C184231	C0010	C0010	C0010	C0010	C1322	C388410	C349330	C891132	CO50100	C136195	C190218	C0609	C051134

NGR	Hydrometric Area	Catchment No.	River/Lake	Year	Source
C419203	39	51	Skeoge R.	1996	Kelly-Quinn, (present study)
C059093	39	51	R. Swilly	1996	Kelly-Quinn (present study)
C128093	39	51	R. Swilly	1996	Kelly-Quinn (present study)
C377410	40	4	Clonmany R. trib.	1996	Kelly-Quinn (present study)
C432530	40	1	Keenagh R.	1996	Kelly-Quinn (present study)

Caenis macrura					
Caenis luctuosa					
Caenis rivulorum			×		
Caenis horaria					
Ephemerella ignita	×	×	×	×	
Ephemerella notata					
Ephemera danica					
Paraleptophlebia cincta			×	×	
Leptophlebia marginata					
Leptophlebia vespertina					
Heptagenia fuscogrisea					
Heptagenia sulphurea					
Electrogena lateralis					
Rhithrogena semicolorata					
Rhithrogena germanica					
Ecdyonurus venosus					
Ecdyonurus torrentis			×		
Ecdyonurus dispar	×	×	×		×
Ecdyonurus insignis			×		
Baetis vernus					
Baetis fuscatus					
Baetis scambus			×	×	
Baetis rhodani	×	×	×	×	×
Baetis muticus		×	×		×
Baetis atrebatinus					
Centroptilum luteolum					×
Cloeon simile					
Cloeon dipterum					
Procloeon bifidum					
Siphlonurus armatus					
Siphlonurus lacustris					
Siphlonurus alternatus					
Ameletus inopinatus					
NGR	C419203	C059093	C128093	C377410	C432530